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ABSTRACT

This report describes a proposal for a preservice teacher education program to prepare agricultural education teachers for the 21st century. The paper identifies and defines the critical roles agricultural education teachers must perform in the 21st century and recommends specific preservice teacher education practices. After an introduction, the first section describes six specific teacher roles and the skills and knowledge needed for each: (1) facilitator of learning; (2) understander of the learner; (3) program developer; (4) administrator; (5) professional educator; and (6) role model and mentor. The second section explores the development of a preservice curriculum and describes specific courses based on guidelines suggested by the National Council for Accreditation of Teacher Education, State Teacher Education and Certification Standards, and the Standards for Quality Vocational Programs in Agriculture/Agribusiness Education. Section 3 examines teaching methods for effective presentation of the preservice agricultural teacher curriculum. Section 4 covers resources and facilities needed for effective preparation of preservice agricultural education teachers, including instructional and support facilities, instructional equipment, off-campus facilities, and funding sources. Section 5 discusses recruitment, selection, and retention of students. Section 6 covers faculty selection. Section 7 examines program evaluation. Section 8 outlines the elements that distinguish the proposed preservice program from other preservice teacher education programs in agriculture. Section 9 looks at issues and problems associated with developing a preservice teacher education program in agriculture in each of the areas described. (Contains 68 references.) (ND)

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Program for the Preparation of Preservice Agricultural Education Teachers For The Twenty-First Century

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A Program for the Preparation of Preservice Agricultural Education Teachers For The Twenty-First Century

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INTRODUCTION

> "Teacher education is a big business. Each year, more than 100,000 aspiring teachers are graduated from over 1,200 colleges and universities in the United States. Many of them join the two million teachers currently in the work force. The education of teachers is not only big business, it is important business to a democratic nation that depends on an educated citizenry."
>
> Donald R. Cruickshank
> Models for the Preparation of America's Teachers
> 1985, pg. 1

Agriculture has a long history of being in the business of educating people (Torres & Garton, 1991). Since 1733, agriculture has been taught in the United States. The passage of the Morrill Acts of 1862 and 1890 set the stage for more formal programs of agriculture by establishing land-grant colleges and universities.

The United States Congress passed the Nelson Amendments to the Morrill Acts in 1907 (Torres & Garton, 1991). These amendments allocated funds to begin the preparation of teachers of agriculture. With the passage of the Smith-Hughes Act of 1917, Congress further defined the role of agricultural education and established additional agriculture teacher training programs (Torres & Garton, 1991).

When agricultural education teachers were first trained, they were trained to teach production agriculture to their students. Supervised projects of high school students consisted of raising crops and livestock enterprises, performing supplementary farm practices, and conducting home improvement projects. With the passage of the Vocational Education Act of 1963, agriculture began to include activities other than production agriculture. Emphasis began to be placed on the processing, marketing, and distribution

of agricultural products and services. Cooperative work experience on farms and in agribusinesses became ways for students to gain agricultural experience. Agricultural education teachers then had to be trained on how to prepare students for emerging careers in agriculture and how to supervised students who participated in cooperative work experience.

In 1988, major reforms were recommended to agricultural education. Enrollment in high school agricultural education courses and programs were declining steadily. Many students who were enrolling in agricultural education courses were not living on farms. More students were coming from urban and suburban areas than rural areas. To increase enrollments and save agricultural education programs, it was recommended to change the high school curriculum to include more emphasis on science and business.

The integration of science into the agriculture curriculum is not a new concept. In early American schools, agriculture was taught as an applied science and was the basis for science education (Sutphin, 1992). Very few distinctions existed between agricultural education and science education until the Smith-Hughes Act was passed in 1917.

In 1988, the Committee on Agricultural Education in Secondary Schools recommended that agricultural education apply the concepts of physical, biological, and chemical sciences to the teaching of agriculture. Trends in local agricultural education programs also suggested that teaching the science of agriculture was a viable and promising direction for programs to seek. Integrating biology, chemistry, and physical sciences with the social sciences to address agriculturally related problems would help students find meaning and relevancy to a sometimes fragmented and disjointed curriculum.

In this trend of incorporating science into the agriculture curriculum continues, then

agriculture teacher education programs need to prepare preservice students to better utilize science principles and concepts in the teaching of agriculture. Agricultural education departments should develop mission statements that are more broad and reflect the changing nature of agriculture.

This proposal presents a preservice teacher education for the preparation of agricultural education teachers in the twenty-first century. The roles, knowledge, skills, and abilities have been defined to incorporate a need to understand and demonstrate science principles and concepts in the future. The curriculum reflects a strong emphasis in science, particularly technical agriculture courses that emphasize science principles and concepts. Instructional techniques used to prepare teachers today should reflect the need to develop knowledge and skills through hands-on activities. Preservice students who have an interest in science and agriculture should be recruited and selected into the teacher education program. The proper resources and facilities should be available to properly prepare these students to become successful teachers. Faculty members should be dedicated to working with these students and developing students who will become successful and dedicated teacher themselves. Finally, the agricultural education department must continually evaluate itself to see that they are achieving their mission of preparing teachers who are literate in science and agriculture.

SECTION ONE

ROLE STATEMENTS

Introduction

The roles of teachers are changing as we approach the twenty-first century. New expectations are placed upon teachers as their job becomes more complex and challenging. Shared decision making, teacher empowerment, the professionalization of teaching, mentoring programs, and increased conflict within teaching have all placed additional responsibility and stress upon teachers. For agricultural education teachers, the roles have become even more complex. Agricultural education teachers are expected today to have a better working knowledge of science and business principles and incorporate these principles into the agricultural education curriculum and prepare their students for careers in agriculture that are more science and business oriented.

To properly and accurately develop a preservice teacher education program to prepare agricultural education teachers, the roles of teachers must be identified and defined. It is difficult to define the roles of agricultural education teachers today because the context of agriculture and agricultural education is changing as well as the students enrolling in high school agricultural education courses.

Howsam, Corrigan, Denemark, and Nash (1976) indicated in their book, Educating a Profession, that there is a lack of agreement in defining the roles of teachers. Some educators, like Heck and Williams (1984) and Charters and Waples (1929), have attempted to define the roles of teachers. However, due to the lack of scholarly research in teacher education, identifying and defining the roles of teachers has primarily rested upon educators stating their opinions on what the roles of teachers should be.

The purpose of this proposal is to identify and define the critical roles agricultural education teachers must perform in the twenty-first century and to recommend a preservice teacher education program that will properly prepare agricultural education teachers to meet the challenges of agriculture and agricultural education in the future. The roles of agricultural education teachers will first be discussed followed by discussing the preservice program to prepare agricultural education teachers. Six roles have been identified. The roles of agricultural education teachers for the twenty-first century include facilitator of learning, understander of the learner, program developer, administrator, professional educator, and role model and mentor.

Specific Roles

Facilitator of Learning

The most important role agricultural education teachers must do is that as a facilitator of learning. As facilitators of learning, agricultural education teachers must bring about change in their students' behavior (Crunkilton and Krebs, 1981). This change is behavior is brought about by teachers subjecting their students to various stimuli during classroom and laboratory instruction. Teachers control the learning process by controlling the amount and intensity of stimuli students receive. Teachers need to understand and be part of a continuous change process and serve as leaders in times of rapid transformation, particularly as agriculture changes (Davies, 1967).

Teachers are no longer in the business of transmitting knowledge to their students. They act as guides and coaches who help students construct their own understandings of the world (Murphy, cited in O'Hair and Odell, 1995). Teachers today must be able to

empower their students to learn on their own. Educating for insight (Parker, 1991) and teaching for meaningful understanding (Murphy, 1991) replaces teaching as telling as the dominant instructional metaphor in today's society.

Heck and Williams (1984) suggested that in the complex society in which we live and work, children should be provided with opportunities to develop skills and abilities to help them become problem solvers and decision makers. Students must be able to inquire, think, and organize facts and ideas, and assume greater responsibility for their own learning (Davies, 1967). Many agricultural educators have supported this idea of making students effective problem solvers and decision makers as well as reflective thinkers (Moss, 1984; Newcomb, McCracken and Warmbrod, 1993; Crunkilton and Krebs, 1981).

As facilitators of learning, agricultural education teachers must prepare their students to learn and understand about the changing context of agriculture. Agriculture is dynamic and rapidly changing. New forces, such as urbanization, domestic farm and trade policies, lifestyle changes, global competition, biotechnology, and other advancements in science have affected agriculture and ultimately agricultural education (Committee on Agricultural Education in Secondary Schools, 1988). Agricultural education teachers must be prepared to facilitate student learning in new areas of agriculture, including the science and business aspects of agriculture, and create a positive learning atmosphere if students are to be able to acquire the skills needed to secure jobs in new areas of agriculture.

To be successful facilitators of learning, agricultural education teachers need knowledge in teaching and learning theory, as well as the technical skills and background

in agriculture (Torres and Garton, 1991). Agricultural education teachers must have the ability to demonstrate technical skills to their students and encourage their students to have positive self-concepts and self-esteems. To be able to facilitate learning in new areas of agriculture, agricultural education teachers also need to have knowledge of the principles of science and business, understand how these principles relate to agriculture and demonstrate how these principles relate to agriculture using real, practical examples.

Agricultural education teachers must also have a working knowledge of principles of teaching and learning (Newcomb, McCracken, and Warmbrod, 1993). They should also be familiar with the characteristics of effective teaching as outlined by Rosenshine and Furst (1971), Medley (1977), and Cruickshank (1990) and demonstrate effective teaching characteristics in their classrooms.

Understander of the Learner

Being an understander of the learner means understanding the human growth and development of students. It also means understanding the learning process and having an insight to how students learn. Greater emphasis is being placed today on teachers understanding how students learn and develop (Ohio Standards for Teacher Education and Certification, 1994). Teachers also need to understand how diverse, multiethnic students learn and develop, and must draw on a repertoire of teaching strategies to need a wide range of individual needs (Fullan, cited in O'Hair & Odell, 1995). To fully understand learners, teachers must be aware of students' learning styles, personality styles and behaviors when preparing lessons and activities. Teachers are also becoming less concerned with finding the most effective instructional strategy than they are with expanding the variety of approaches needed to tailor classroom experience to the needs

includes many components, such as classroom instruction, FFA activities, supervised agricultural experience program (SAEP) activities, adult education, and extended programming.

A total agricultural education program should best meet the needs of all people living within the community (Phipps & Osborne, 1988). When developing the total agricultural education program, agricultural education teachers should survey the community to its needs and develop objectives for the agricultural education program that best meet not only the needs of the community, but the students enrolling in the program as well.

Many different items should be included in the total agricultural education program plan. Specific items should include policies and procedures for the FFA, courses of study, supervised agricultural experience program (SAEP) policies and procedures, placement of students, recruitment and selection of students, publicity, use of advisory councils, and plans for adult education in the program (Phipps & Osborne, 1988). For agricultural education programs today, agricultural education teachers need also to include activities, resources, projects, and funding for science and business related activities when planning the instructional program.

Heck and Williams (1984) describe program developers as individuals who must broaden their definition beyond academic achievement, work with parents and other members of the educational community to acquaint them with curriculum goals that focus on the development of the total learner, and study theories and practices that constitute the development of American education and to change to meet the needs of a rapidly changing world. Agricultural education teachers must plan agricultural education

programs with rigor and challenge, while keeping teaching and learning activities meaningful for every student (Phipps & Osborne, 1988).

Administrator

Agricultural education teachers must be competent and effective administrators to direct the activities of the total agricultural education program. Because agricultural education programs contain many different components and can be quite diverse, agricultural education teachers must perform different administrative functions to ensure that the program runs efficiently. Heck and Williams (1984) identified functions teachers must perform as administrators. These functions include planning, organizing, communicating, reporting and evaluating.

As planners, agricultural education teachers plan and develop lesson plans and establish objectives for different courses they teach. They also develop courses of study for every course they teach and unit plans for each course. To assist in planning, agricultural education teachers should establish goals and objectives for each course being taught in the program and daily lesson plans. The success or failure of teaching can be directly traced to the effectiveness of planning by the teacher (Crunkilton & Krebs, 1981).

As organizers, agricultural education teachers organize materials, programs and activities they use in the classroom to promote a positive learning environment. When organizing, agricultural education teachers must be flexible and adaptable to meet the needs of the situation they are in or for students enrolled in their classes. With greater student diversity in agricultural education programs today, experiences and activities for students must be developed and organized to allow all students the opportunity to share

in the same or similar experiences.

As communicators, agricultural education teachers must communicate with students, parents, administrators, and other colleagues. Amberson and Bishop (cited in Berkey, 1981) stated that teachers of agriculture, in many cases, are liaisons between their schools and the agriculture/agribusiness communities. To have positive relationships with students, parents, and members of the community, agricultural education teachers must demonstrate excellent oral and written communication skills to be able to effectively communicate the philosophy, goals and objectives of the agricultural education program.

As reporters and evaluators, agricultural education teachers have the primary responsibility of evaluating student progress in classroom and laboratory settings. Agricultural education teachers must keep accurate records of such progress and report progress at the appropriate time. While the primary way of reporting student progress is through grades, agricultural education teachers must also document competencies and skills students have developed and the level of competence for each competency and skill. Such information is very important to document as prospective employers seek students for work experience or employment following graduation. Teachers must master assessment and monitoring techniques for identifying and exhibiting a range of leaning outcomes (Fullan, cited on O'Hair & Odell, 1995). Teachers may also encourage their students to develop portfolios to document successful projects and papers completed in high school that may be useful when seeking higher education or work experience following graduation.

Professional Educator

Another role Heck and Williams (1984) identified teachers as was that of a

professional. To be a professional educator, agricultural education teachers should participate in professional development activities that will not only help themselves grow professionally as teachers, but ultimately provide benefits to students and communities in which teachers serve.

One way of being a professional educator is by becoming active members of professional organizations not only in their specific discipline, but within education as well. Such professional organizations agricultural education teachers should become actively involved with are state and national agricultural education teacher organizations (National Vocational Agriculture Teachers Association (NVATA) and affiliated organizations), state and national vocational educational organizations (American Vocational Association (AVA) and affiliated organizations), and local, state, and national education organizations (National Education Association (NEA) and affiliated organizations).

Another way of becoming a professional educator is by attending professional meetings, workshops, and seminars that keep agricultural education teachers up-to-date on current trends and issues in agriculture and agricultural education. With the changing nature of the agriculture industry and increased emphasis on science and business in agricultural education, agricultural education teachers need to attend and participate in such activities to learn about new technologies and new trends in agriculture within these aspects of agriculture. Having a knowledge of such information will help ensure that students learn the most up-to-date information to properly prepare them with skills and competencies needed for careers in agriculture.

Phipps and Osborne (1988) identified the importance of agricultural education teachers as professional educators when they said that agricultural education teachers

should have the ability to behave as professional educators and as members of professional groups. Agricultural education teachers should become scholarly individuals by participating in life long learning activities and becoming consumers of research that will help improve their teaching and make a stronger total agricultural education program.

Role Model and Mentor

A final role agricultural education teachers must perform is that of being a role model. The Strategic Plan for Agricultural Education (1989) stated that agricultural education teachers need to serve as role models and mentors and lead by example. Heck and Williams (1984) supported the concept of teachers serving as role models to assist students in developing their human qualities in a productive manner.

Agricultural education teachers sometimes serve as guidance counselors to their students. Agricultural education teachers assist their students about making decisions about determining is they should attend college. One of the goals of agricultural education is to prepare students for entry level employment in the field of agriculture and/or further education in the area of agriculture (Raven, 1989). Miller, Williams, and Sprouse (1984) said that high school agricultural education students have a close relationship with their agricultural education instructors, and that instructors have considerable influence on their students' career choices. Guidance has always been considered an important role for agricultural education teachers to fulfill (Kotrlik & Harrison, 1987).

Each community expects, and perhaps has a right to expect, a certain standard of conduct from agricultural education teachers (Juergenson, 1967). Agricultural education teachers have long been respected members of communities where they teach and will continue to be looked upon as role models in the future. Naturally, agricultural education

teachers play an important part in helping develop attitudes, ambitions, moral and physical standards, and other basic values that parents are concerned with in the development of their children (Juergenson, 1967).

Requisite Knowledge, Skills, and Attitudes

The roles described above depict the expected functions of agricultural education teachers today. To be able to successfully perform the roles of an agricultural education teachers, they must possess certain knowledge, skills, and attitudes about agriculture and education.

Before identifying the knowledge, skills, and attitudes agricultural education teachers should have, I will define what I mean by knowledge, skills, and attitudes. Knowledge refers to having an understanding of the general concepts and principles that will guide teachers in making decisions about organizing, planning, and directing instruction. Skills refer to demonstrating or practicing concepts and principles in an applied and practical setting. Attitudes refer to beliefs or positions teachers have about teaching and its related concepts, students, the community, and the total agricultural education program.

Previous authors of preservice teacher education programs in agriculture (Miller, 1988; Raven, 1989; Torres & Garton, 1991) have used four primary sources to identify the abilities, knowledge, skills, and attitudes required for agricultural education teachers to perform their roles. These sources were: (1) The Ohio Agricultural Education Service Manual of Operations (1978), (2) Handbook on Agricultural Education in Public Schools (Phipps & Osborne, 1988), (3) Standards for Quality Vocational Programs in Agriculture/Agribusiness Education (1977), and (4) Methods in Teaching Agriculture

(Newcomb, McCracken, & Warmbrod, 1993). For each role identified for agricultural education teachers in the twenty-first century, knowledge, skills, and abilities will be separated into distinct categories for easier identification and reference.

Knowledge, Skills, and Attitudes Required by Agricultural Education Teachers to Perform as

Facilitators of Learning

Knowledge

1. Determine content for courses of study for the agricultural education program
2. Identify the components of weekly and daily lesson plans
3. Describe the benefits of students conducting supervised agricultural experience programs and accurate records
4. Recognize safe practices and procedures needed in agricultural education laboratories
5. Possess a working knowledge of teaching activities that will provide for maximum student learning
6. Discuss the advantages and disadvantages of using certain teaching techniques in the agricultural education classroom
7. Possess a working knowledge of effective teaching practices documented and identified by Rosenshine & Furst (1971), Dunkin & Biddle (1974), Cruickshank (1990), and other educators
8. Identify different ways student performance can be measured and assessed
9. Understand the problem solving approach to teaching and its relationship to the learning process
10. Identify ways for promoting cultural diversity in the classroom
11. Identify reward and reinforcement techniques that will help promote student learning
12. Demonstrate a working knowledge of the principles of learning

5. Prepare lessons and select activities that correspond with students' learning styles

6. Demonstrate sills for teaching in a pluralistic society

7. Make provisions for individual student learning and situational differences in planning lessons and selecting learning activities

8. Conduct conferences with students and parents regularly to determine students' needs

Attitudes

1. Be sensitive to the needs of students and individual student differences within the instructional program

2. Treat all students equally despite race, culture, socioeconomic class or gender

3. Appreciate multicultural contexts and the need to appreciate these contexts for teaching in a pluralistic society

Knowledge, Skills, and Attitudes
Required by Agricultural Education Teachers to Perform as

Program Developers

Knowledge

1. Identify needs of students, the local community, and local businesses to use in planning the total agricultural education program

2. Identify and describe the components of the total agricultural education program

3. Identify community resources to assist in planning the total agricultural education program

4. Identify ways to promote the total agricultural education program

5. Determine goals and objectives of the total agricultural program

6. Outline program completion standards for agricultural education students

7. Identify and explain trends and recent developments in the community regarding agricultural issues

Skills

1. Prepare a planned program of instruction for the extended service time during the summer months of employment

2. Plan the total instructional program for which he/she is responsible based on the needs of the students in the program and the industry in which the program is planned and conducted

3. Conduct surveys of the industry related to the program of instruction to determine future employment needs

4. Prepare task analysis studies to determine the competencies required by those persons entering employment

5. Survey local student population to determine interest and aptitude for entry into employment in the industry related to the program of instruction

6. Put together a public relations program that informs the community of activities and student achievements

7. Develop courses of study for courses offered in the agricultural education program

8. Write unit plans and daily lesson plans for courses offered in agricultural education

9. Promote the total agricultural education program through a variety of ways, including presentations, brochures, displays, news releases, television, and radio programs

10. Develop strategies to promote the agricultural program to parents, potential students, administrators, and the public at large

11. Compose descriptions of local job market that includes service area of the agricultural education program and the agricultural production and related industry in the area

12. Develop subject matter content outline including a list of skills, knowledge, and attitudes necessary for employment and/or further education in targeted occupations

13. Develop a personal philosophy of agricultural education

14. Organize and conduct adult education programs in agriculture

15. Plan a program to recruit students into the agricultural education program

16. Organize an agricultural education advisory committee

17. Plan and select FFA activities that promote leadership and personal skill development in students

18. Develop and provide a program for placement and follow-up of agricultural education students

19. Incorporate biology, chemistry, and physical science principles into agricultural education courses of study

Attitudes

1. Be willing to plan an agricultural education program that meets the needs of the local community

2. Appreciate the need to develop a program that meet the trends of the students and the local community

Knowledge, Skills, and Attitudes
Required by Agricultural Education Teachers to Perform as

Administrators

Knowledge

1. Possess a knowledge of methods for maintaining inventories of tools, equipment, instructional materials, and supplies

2. Identify materials list necessary to fulfill goals and objectives of the agricultural program

3. Identify fiscal resources for financing agricultural education program

4. Identify alternatives for conducting annual program evaluations

5. Identify resources needed to facilitate learning in agriscience education

Skills

1. Organize and meet with the local advisory committee for the agricultural education program

2. Coordinate the agricultural education program with the activities of related agricultural industries in the community

3. Conduct the FFA program and incorporate various activities into the program

4. Organize and provide programs of continuing education in agriculture

5. Maintain department facilities and equipment by:

   a. maintaining an inventory of tools, equipment, instructional materials, and supplies with financial and service records

   b. arranging for the maintenance, repair, and replacement of the tools and equipment

   c. developing a budget each year to be submitted to the school administration for the purchase of new and replacement equipment, supplies, and instructional materials needed for conducting the program

6. Prepare and submit all departmental reports on time to local school district and state supervisory staff

7. Develop a prioritized budget system

8. Allocate fiscal resources

9. Keep accurate records of all financial transactions

10. Develop, review, and revise the comprehensive agricultural education program plan

11. Prepare plans for facility and equipment acquisition and maintenance

12. Conduct annual program evaluation

13. Plan and conduct agricultural staff meetings

14. Develop microcomputer skills to help in management of instruction

15. Develop community and business relations

16. Arrange transportation for off-campus activities

17. Coordinate program with other teachers

18. Maintain records on all students in the agricultural education program and for three years after graduation

19. Work with school principal and superintendent on school policy and other related matters

20. Administer, coordinate, and supervise all program activities

Attitudes

1. Maintain a balance between personal and professional life

2. Display a democratize leadership style when working with individuals

3. Conform to the policies and procedures of local education agencies when planning and organizing the total agricultural education program

Knowledge, Skills, and Attitudes
Needed by Agricultural Education Teachers to Perform as

Professional Educators

Knowledge

1. Identify requirements for an effective extended service plan

2. Identify and assess emerging areas of emphases in agricultural education

3. Stay current on advancements in instructional trends

4. Possess a body of knowledge which is expected of a well-educated individual

Skills

1. Participate in inservice professional development activities

2. Coordinate instructional program with other teachers in the school

3. Participate in the total school program

4. Develop and submit a written plan for effective extended service

5. Review and revise professional development plan on an annual basis

6. Integrate into the program new issues, practices, and technologies relevant to the program

7. Articulate agricultural education program with teachers in related disciplines

8. Create collaborative work cultures inside and outside the school while working with colleagues

Attitudes

1. Serve the teaching profession at the local, state, and/or national level

2. Develop an active personal philosophy of education

3. Become an active member and participate in local, state, and national professional teacher organizations

4. Participate in professional and technical improvement activities appropriate for the agricultural education program area

5. Participate in activities of other agricultural organizations within the community

6. Participate in activities that will increase one's appreciation toward science

Knowledge, Skills, and Attitudes
Required by Agricultural Education Teachers to Perform as

Role Models and Mentors

Knowledge

1. Discuss how to use conferences to assist students in identifying their needs

2. Identify colleges and universities where students may acquire information about seeking a higher education

3. Identify procedures to follow when conducting a SAEP supervisory visit

Skills

1. Help students in making career plans and review plans regularly

2. Assist and advise students in the development and implementation of supervised agricultural experience programs

3. Use conferences to help meet student needs
4. Establish and maintain relationships with students
5. Conduct home visits with students and parents

Attitudes

1. Visit students at least once per academic quarter at the SAE site on an individual basis
2. Review student participation in the FFA annually
3. Involve every student in the FFA
4. Be willing to assist and advise students twelve months a year
5. Assist students in preparing for college
6. Present a professional presence to students in the areas of morals, dress, and attitude
7. Encourage students in areas of interest
8. Treat all students equally, despite race, culture, socioeconomic status, and gender
9. Stimulate interest in learning, being a well-educated person and a productive citizen
10. Possess the qualities of professionalism and leadership
11. Encourage trust and openness in students

SECTION TWO

THE CURRICULUM

Following the identification of roles and knowledge, skills, and attitudes needed by agricultural education teachers, the next step is to develop a preservice curriculum that will prepare agricultural education teachers to execute these roles. With the context of agricultural education changing to include more science and business oriented activities, the preservice teacher education curriculum for agricultural education teachers should include course work that will prepare teachers to teach these concepts to their students.

Several sources are available to help guide the preservice teacher education programs in agriculture in planning the curriculum. Sources such as National Council for Accreditation of Teacher Education (1994), NCATE; National Association of State Directors of Teacher Education & Certification (1989), NASDTEC; Teacher Education and Certification Standards for the state where the curriculum is developed, and the Standards for Quality Vocational Programs in Agriculture/Agribusiness Education (1977) should be carefully reviewed as the agriculture teacher education preservice curriculum is planned and developed. Agriculture teacher educators should also recognize that agricultural education teachers need stronger backgrounds in science and business and should plan the curriculum accordingly to provide preservice students with experiences in such courses.

According to NCATE (1994), teacher education programs should have a high quality professional education programs derived from conceptual frameworks that are knowledge-based, articulate, shared, coherent, consistent with the unit and/or institutional mission, and continuously evaluated. Specific indicators for the teacher education curriculum

include:

(1) The conceptual frameworks are written, well articulated, and shared among faculty, candidates, and other members of the professional community.

(a) The frameworks are defined and make explicit the professional commitments, dispositions, and values that support it, including commitments to acquire and use professional knowledge on behalf of students.

(b) The frameworks include a philosophy and purposes, contain assessment statements of desired results for candidates, and provide an associated rationale for coursework, field experiences, and program evaluation.

(c) The frameworks reflect multicultural and global perspectives which permeate all programs.

(d) The frameworks and knowledge bases that support each professional education program rest on established and contemporary research, the wisdom of practice, and emerging education policies and practices.

(2) Coherence exists between the conceptual frameworks and student outcomes, courses, field experiences, instruction, and evaluation.

(a) Courses in general, professional and pedagogical, and integrative studies complement one another and are consistent with the conceptual framework(s).

(b) Field experiences are an integrated part of the professional education curriculum and are consistent with the conceptual framework(s).

(3) The unit engages in regular and systematic evaluations (including, but not limited to, collection of data from students, recent graduates, and other members of the professional community) and uses these results to modify and improve the conceptual framework(s) and programs.

Regarding the general education component of the teacher education curriculum, NCATE (1994) suggests that units ensure that candidates have completed general studies courses and experiences in the liberal arts and sciences and have developed theoretical

and practical knowledge. Specifically, general studies should include courses and/or experiences in the arts, communications, history, literature, mathematics, philosophy, sciences, and the social sciences. It is also suggested that general studies incorporate multicultural and global perspectives in the curriculum.

The content studies component for initial teacher preparation should ensure that teacher candidates attain academic competence in the content that they plan to teach (NCATE, 1994). Candidates should complete a sequence of courses and/or experiences to develop an understanding of the structure, skills, core concepts, ideas, values, facts, methods of inquiry, and uses of technology for the content they plan to teach. Guidelines and standards of specialty organizations should be used in developing programs in each content area.

The professional and pedagogical studies component for initial teacher preparation should prepare teacher candidates to acquire and learn to apply the professional and pedagogical knowledge and skills to become competent to worth with **all** students (NCATE, 1994). Specifically, candidates should complete a well-planned sequence of courses and/or experiences in professional studies in which they acquire and learn to apply knowledge about:

(1) the social, historical, and philosophical foundations of education, including an understanding of the moral, social, and political dimensions of classrooms, teaching, and schools;

(2) the impact of technological and societal changes on schools;

(3) theories of human development and learning;

(4) inquiry and research;

(5) school law and educational policy;

(6) professional ethics; and

(7) the responsibilities, structure, and activities of the profession.

Coursework completed by teacher candidates in the professional and pedagogical studies component should help candidates develop understanding and use of:

(1) research and experienced-based principles of effective practice for encouraging the intellectual, social, and personal developments of students;

(2) different student approaches to learning for creating instructional opportunities adapted to learners from diverse cultural backgrounds and with exceptionalities;

(3) variety of instructional strategies for developing critical thinking, problem solving, and performance skills;

(4) individual and group motivation for encouraging positive social interaction, active engagement in learning, and self-motivation;

(5) effective verbal, nonverbal, and media communications for fostering active inquiry, collaboration, and supportive interactions in the classroom;

(6) planning and management of instruction based on knowledge of the content area, the community, and curriculum goals;

(7) formal and informal assessment strategies for evaluating and ensuring the continuous intellectual, social, and physical development of the learner;

(8) collaboration with school colleagues, parents, and agencies in the larger community for supporting students' learning and well-being;

(9) effective interactions with parents for supporting students' learning and well-being;

(10) the opportunity for candidates to reflect on their teaching and its effects on student growth and learning; and

(11) educational technology, including the use of the computer and other technologies in instruction, assessment, and professional productivity.

The final component of the NCATE Standards (1994), clinical and field-based experiences, should provide teacher candidates with opportunities to relate principles and

theories from the conceptual framework(s) to actual practice in classrooms and schools. These experiences should be meaningful to all teacher candidates and allow teacher candidates to deal with different ages, and with culturally diverse and exceptional populations. A minimum of ten weeks of full-time student teaching, or its equivalent, is expected of each teacher candidate.

NASDTEC (1989) divides the teacher preparation curriculum into three distinct components: general education, professional education, and teaching major standards. Regarding the general education component, institutions approved for the preparation of teachers should include the following components in the general education program:

(1) evidence of a process for coordinating the development of curriculum and its implementation and evaluation between those departments offering general education experiences and teacher education faculty, to assure that the goals of the general education standards for teacher education programs are achieved;

(2) require study to develop skills of analysis, synthesis, and evaluation essential to understanding intellectual ideas and principles and to develop appreciation of the arts;

(3) require study to develop an understanding of and the ability to use basic mathematical properties, processes, and symbols;

(4) require study of the historical and cultural values, customs, and social institutions--of both western and nonwestern cultures and of both minority and majority cultures in our society--integrating this study where possible;

(5) require study to develop competence in written and oral communication skills; and

(6) require the study and the application of modes of inquiry and the characteristics of the disciplines in the arts, humanities, natural sciences, and the social sciences.

Regarding the professional education component, NASDTEC recommends that prospective teachers complete a program that provides for the development of insights into

child and adolescent psychology, the teaching/learning process, the social interactive process of the classroom, school, and community; the methods and materials of instruction, and the broader problems of the profession as they relate to society and the function of the school. Specific standards recommended by NASDTEC for teacher education programs include:

(1) require experience to develop knowledge, skills, and attitudes in the prospective teacher which will enhance pupil self-esteem and confidence and promote constructive interaction among people of differing economic, social, racial, ethnic, and religious backgrounds;

(2) require study of the general principles of life-long human growth and development and its relationship of teaching and learning theories to physical, social, intellectual, and emotional development;

(3) require study of research about teacher characteristics and behaviors as they affect the learner;

(4) require study of the communication processes and skills for use between the teacher and pupil and between the teacher and others;

(5) require study of techniques for diagnosing the capabilities of the learner and for designing instructional programs forall pupils in the least restrictive environment;

(6) require study of methods and techniques in a clinical setting in the particular field of specialization;

(7) require study of methods of teaching reading in the prospective teacher's area(s) of specialization;

(8) require study of skills and strategies to be used in classroom management of individual, small, and large groups under varying conditions;

(9) require prospective teachers to observe and analyze a variety of teaching models and to assess their own teaching effectiveness and professional growth needs; and

(10) require study of the leaders, ideas, and movement underlying the development and organization of education in the United States.

The final component of the NASDTEC recommendations deals with the preparation of teachers in their specialty area. The following are recommendations dealing specifically with the preparation for agricultural education teachers. Teacher graduating from programs accredited by NASDTEC and seeking certification to teach agriculture should be able to:

(1) demonstrate competence in production agriculture;

(2) demonstrate competence in understanding the biological, physical, and applied sciences as they relate to practical solutions of agricultural problems;

(3) demonstrate competence in understanding the essentials of production agriculture and their relationship to the agribusiness industry;

(4) demonstrate competence and experience in plant and soil science and technology;

(5) demonstrate competence and experience in animal science and technology;

(6) demonstrate competence and/or experience in agribusiness management and technology;

(7) demonstrate competence and experience in agricultural mechanics science and technology;

(8) demonstrate competence in understanding one or more of the following specialized occupational areas:

(a) agriculture production and marketing
(b) agribusiness management
(c) agricultural equipment and supplies
(d) agricultural products
(e) ornamental horticulture
(f) agricultural resources
(g) natural resources management
(h) environmental development
(i) forestry;

(9) demonstrate competence and experience designed to develop skills necessary for establishing agricultural youth organizations as a means of teaching leadership skills and group cooperative efforts; and

(10) demonstrate competence and experience designed to develop the ability to use appropriate occupational skills while working with students and adults in Supervised Agricultural Experience Programs relative to agricultural instructional areas.

The Ohio Standards for Teacher Education and Certification (1994) today describe what teachers should know and can do, rather than listing courses that teachers should take. The 1987 Ohio Standards were more specific regarding the minimum number of semester hours teacher candidates should complete to receive a baccalaureate degree from an approved program.

The new Ohio Standards (1994) are grouped under ten principles and are divided into statements of required knowledge, dispositions, and performance teacher candidates should have upon completion of their degree program. These statements are to serve two purposes: (1) to serve as the basis for the assessment of beginning teachers prior to full licensure, and (2) to drive the development of teacher preparation programs in Ohio.

The specific principles that guide the preparation of teachers in Ohio today require teachers to:

(1) understand the central concepts, tools of inquiry, and structures of the discipline(s) s/he teaches and can create learning experiences that make these aspects of subject matter meaningful for students;

(2) understand how students learn and develop, and provide learning opportunities that support intellectual, career, social, and personal development;

(3) understand how students differ in their approaches to learning and create instructional opportunities that are equitable and are adaptable to diverse learners;

(4) plan instruction based upon knowledge of subject matter, students, the community, curriculum goals, and Ohio curriculum models;

(5) understand and use a variety of instructional strategies to encourage students' development of critical thinking, problem solving, and performance skills;

(6) use an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation;

(7) use knowledge of effective verbal, nonverbal, and media communication techniques, and other forms of symbolic representation, to foster active inquiry, collaboration, and supportive interaction in the classroom;

(8) understand and use formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical development of the learner;

(9) becomes a reflective practitioner who continually evaluates the effects of his/her choices and actions on students, parents, and other professionals in the learning community, and who actively seeks out opportunities to grow professionally; and

(10) foster relationships with parents, school colleagues, and organizations in the larger community to support students' learning and development.

In 1988, the Committee on Agricultural Education in Secondary Schools recommended improvements for teacher education programs in agriculture. Teacher education programs should continue to stress applied learning, but should also strengthen instruction in science, technology, economics, agribusiness, marketing and management, international agriculture, and public policy. Furthermore, teacher educators in agricultural education should establish better linkages with colleagues in science education, business management, and educational technology. These recommendations will be considered when planning the preservice teacher education program for agricultural education teachers.

Using the role statements presented earlier in this document along with the knowledge, skills, and attitudes identified for agricultural education teachers to be successful, national and state accreditation standards, and recommendations from various proposals such as the Holmes Group (1986) and Committee on Agricultural Education in Secondary Schools (1988), a specific curriculum for the preparation of agricultural education teachers can be developed. To serve as the framework for the proposed curriculum, the three components of the NCATE standards (1994) serve as the foundation for the curriculum. The following preservice curriculum is suggested for the preparation for agricultural education teachers in the twenty-first century.

General Education

Several educators and education reports have supported the inclusion of the general education curriculum in the preparation of teachers (Adler, 1982; Boyer, 1983; Conant, 1963; Holmes Group, 1986; Howsam, Corrigan, Denemark, and Nash, 1976; Scannell, 1983; Silberman, 1970). However, the scope and amount of general education from different proposals have varied. For example, Adler, in The Padelia Proposal (1982) recommended that the only curriculum preservice teachers needed was a general education curriculum. The Standards for Quality Vocational Programs in Agriculture/Agribusiness Education (1977) and Crunkilton and Hemp (cited in Berkey, 1981) recommended that the general education component comprise 20 to 30 percent of the preservice curriculum.

NCATE (1994) recommends that teacher education candidates completing general education coursework and experiences in the liberal arts and sciences develop a theoretical and practical knowledge of these courses. NASDTEC (1989) recommends that

the general education component provide the knowledge, skills, understanding, and appreciation associated with a well-educated, sensitive individual. With the increased emphasis in science and business in agricultural education (Committee on Agricultural Education in Secondary Schools, 1988), it seems logical that additional coursework be emphasized and recommended in the general education component for preservice agricultural education teachers.

Table 1 presents the general education component being recommended for the preservice teacher education program in agriculture. The proposed general education curriculum for preservice agricultural education majors consists of 46 semester hours of coursework distributed among the areas of arts and humanities (15 hours), mathematics and statistics (6 hours), natural science (16 hours), and social science (9 hours). This represents 35 percent of the total course work recommended for preservice agricultural education teachers. Some courses in the general education component may function as "complementary knowledge" or knowledge that complements the teaching of agricultural education and gives meaning to the general education component (Smith, 1980; Miller, 1988; Torres and Garton, 1991).

Content Studies

Table 2 presents the courses for the content studies component of the preservice teacher education curriculum in agriculture. Only through pursuing a subject past an introductory level can prospective teachers gain a coherent picture of the subject so it can be communicated and taught to others (Conant, 1963). The Holmes Group (1986) argued that prospective teachers must study both the subjects they will teach and the pedagogy of the subject matter.

Table 1. General Education Component for the Preservice Preparation of Agricultural Education Teachers

Courses	Role Developed					
General Education (46 semester hours)						
Arts and Humanities (15 semester hours)						
English and Writing Skills (3)	F	U	D	A	E	
Visual and Performing Arts (3)	F	U				
Oral Communication (3)	F		D	A	E	R
Philosophy (3)	F	U			E	
Literature (3)	F	U			E	
Mathematics and Statistics (6 semester hours)						
Calculus (3)	F		D	A		
Statistics/Data Analysis (3)	F		D	A		
Natural Science (16 semester hours)						
Biology (8)	F		D		E	
Chemistry (4)	F		D		E	
Physics (4)	F		D		E	
Social Science (9 semester hours)						
American History (3)	F	U				
Political Science (3)	F				E	
Rural Sociology (3)	F	U				

Key: F = Facilitator of Learning
U = Understander of Learner
D = Program Developer
A = Administrator
E = Professional Educator
R = Role Model and Mentor

Table 2. Content Studies Component for the Preservice Preparation of Agricultural Education Teachers

Courses	Role Developed
Content Studies (50 semester hours)	
Technical Agriculture (39 semester hours)	
Small Engines (3)	F D
Agricultural Construction Processes (4)	F D
Introduction to Agricultural Economics (3)	F D
Principles of Agribusiness Management (3)	F D
Introduction to Crop Science (3)	F D
Soil Science (3)	F D
Introduction to Animal Sciences (3)	F D
Principles of Animal Nutrition (3)	F D
Livestock Management (3)	F D
Introduction to Horticulture (3)	F D
Greenhouse Management (3)	F D
Environmental Science and Management (3)	F D
Principles of Meat Science (2)	F D
Agricultural Education Professional Component (11 semester hours)	
Foundations of Agricultural Education (1)	F U D A E R
Curriculum Development in Agricultural Education (2)	F U D A E
Program Planning in Agricultural Education (2)	F U D A E R
Leadership Development and Work Experience in Agriculture (3)	F U D A E R
Laboratory Management in Agricultural Education (3)	F U D A E

Key: F = Facilitator of Learning
U = Understander of Learner
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The technical agriculture curriculum includes 41 semester hours of course work (31 percent of the total course work) and is designed to prepare and give practical experience to students in the specialty of agriculture that serves as a basis for agricultural education. Many teacher educators have agreed that the preparation of teachers in the subject content they need to teach is important (Conant, 1963; Cruickshank, 1990). Courses recommended in this area are mainly introductory in nature and will be administered through the College of Agriculture. Courses selected for the technical agriculture component contain physical science, biology, and chemistry principles, or business management principles as they relate to agricultural principles and concepts in a practical setting. Choosing technical agriculture courses that emphasize these principles will greatly aid in helping agricultural education teachers develop stronger backgrounds in science and business and relate such principles to agriculture as they prepare to teach more business and science oriented courses to high school students. Courses specified also meet the standards set forth by NASDTEC (1989) for certification to teach agriculture.

The following provides brief descriptions of technical agriculture courses as they should be developed or revised to include science or business principles:

Small Engines - Principles on the operation, maintenance, and repair of two-cycle and four-cycle small gasoline engines, including the understanding of how engines operate relating physical science and chemistry principles.

Agricultural Construction Processes - Principles and techniques in the fabrication of wood, concrete, masonry, and fabrication of metal for applications in agriculture and agribusiness. Physical science and chemistry principles will be incorporated into this course, including use of gases in welding, soldering, and brazing and forging iron and

steel.

Introduction of Agricultural Economics - Identification and discussion of basic microeconomic principles as applied to the allocation of resources in the production, distribution, and consumption of food and fiber products.

Principles of Agribusiness Management - Introduction to agribusiness management principles and skills in context to basic functions of management: planning, organizing, directing, and controlling.

Introduction to Crop Science - Study of the biological, environmental, genetic, and cultural factors that influence the production of agronomic crops.

Soil Science - Introduction to the physical, chemical, and biological principles of soil as related to land use, environmental quality, and crop production.

Introduction to Animal Sciences - Role, current organization, history, and characteristics of the beef, sheep, swine, poultry, and horse industry. Basic biological principles of animal production will be introduced.

Principles of Animal Nutrition - Study of the biological and chemical processes in the feeding and nutrition of mammals and birds.

Introduction to Horticulture - Study of the biological principles that aid in the production of horticultural and greenhouse crops.

Greenhouse Management - Study on how to properly manage a greenhouse, including understanding how biological, chemical, and business principles guide decisions made in the everyday operation and management of the greenhouse.

Environmental Science and Management - Introduction to environmental science, major environmental problems, and related technical and socioeconomical issues related

to promoting a save environment in which to live.

Principles of Meat Science - Study of the basic wholesale and retail cuts of meat of beef, sheep, and pork and how meats may be processed, stored, and prepared.

According to NASDTEC (1989) and NCATE (1994) and the role statements specified earlier in this proposal, preservice teachers in agricultural education will be required to complete coursework that deals with the professional component of agricultural education. This part of the preservice curriculum consists of 11 semester hours of course work, or 8 percent of the total course work recommended, and will include the following specific courses: Foundations of Agricultural Education, Curriculum Development in Agricultural Education, Program Planning in Agricultural Education, Leadership Development and Work Experience in Agriculture, and Laboratory Management in Agricultural Education.

The agricultural education department will be responsible for the instruction and preparation of preservice agricultural education teachers in these courses. The following is a brief description the courses offered:

Foundations of Agricultural Education (1 hour) - This course will provide students with an introduction to agricultural education. Course content will discuss the goals and objectives in agricultural education, philosophy of agricultural education, history and development of agricultural education, trends in agricultural education, and the roles and responsibilities of agricultural education teachers as we approach the twenty-first century.

Curriculum Development in Agricultural Education (2 hours) - This course will provide students an opportunity to plan courses of study, unit plans, and lesson plans for the agricultural education curriculum. Students will be encouraged to select appropriate

teaching techniques and activities to effectively present lesson content. Students will also prepare lessons to deal with different learning styles, personality styles, and cultural differences of students enrolling in agriculture courses.

Program Planning in Agricultural Education (2 hours) - This course will provide students an opportunity to develop the total agricultural education program. Course content will address the use of advisory committees, public relations, adult education programs, supervised agricultural experience programs, FFA, community needs, curriculum, and philosophy in relation to planning the total program.

Leadership Development and Work Experience in Agriculture (3 hours) - This course will discuss the role of the agricultural education program in preparing students for leadership roles and work experience in the local community. The role of the FFA and supervised agricultural experience programs (SAEP) will be addressed. Also addressed will be selecting, planning, conducting, and evaluating different types of SAEPS for all agricultural education students, including home and/or farm experiences, cooperative work experiences, and school-based experiences.

Laboratory Management in Agricultural Education (3 hours) - This course will address how to effectively manage laboratory settings in agricultural education. Course content will specifically address how to organize and manage agricultural mechanics laboratories, greenhouses, land laboratories, and agriscience laboratories that promote positive atmospheres conducive to student learning.

Professional Studies

Three areas make up the professional studies component of the preservice teacher education curriculum in agriculture: humanistic and behavioral studies, teaching and

learning theory and practicum. Table three presents the specific courses and the roles each course will address. Each of these areas will be described in detail.

Course work in humanistic and behavioral studies is also commonly known as foundational studies. These courses are intended to bridge together general education and pedagogy courses (Cruickshank, 1985). Eleven semester hours (8 percent) of coursework will constitute the humanistic and behavioral studies area of the professional studies component. Courses will include philosophy of education, history of education, sociological foundations of education, and social foundations of education.

The following provides a brief description of humanistic and behavioral studies courses to be completed by students:

Philosophy of Education - Provides students with the application of philosophy of education to issues and problems of teaching and living in a culturally diverse society in the twenty-first century.

History of Education - History of education and schools as factors in the development of theories, practice, and relations with other social institutions in modern-day education.

Psychological Foundations of Education - Facts and principles of human development and learning as applies to problems of education with an emphasis of scientific evidence in the solution of educational problems and the critical appraisal of the implications of education of modern psychological findings to educational problems.

Social Foundations of Education - Study of current social trends as they affect education and the backgrounds of school children, social status of teachers, and the role of power in bureaucracy.

Table 3. Professional Component for the Preservice Preparation of Agricultural Education Teachers

Courses	Role Developed
Professional Studies (37 semester hours)	
Humanistic and Behavioral Studies (11 semester hours)	
Philosophy of Education (3)	D A E R
History of Education (2)	A E R
Psychological Foundations of Education (3)	F U D A E R
Social Foundations of Education (3)	F U D A E
Teaching and Learning Theory (12 semester hours)	
Methods of Teaching Agriculture (4)	F U D
Psychology of Learning (3)	F U D
Working with Exceptional Children (3)	F U D A
Multicultural Education (2)	F U D A
Practicum (14 semester hours)	
Student Teaching (12)	F U D A E R
Early Field Experience (2)	F U D A E R

Key: F = Facilitator of Learning
U = Understander of Learner
D = Program Developer
A = Administrator
E = Professional Educator
R = Role Model and Mentor

The teaching and learning theory area refers to what is known about teaching and learning (Cruickshank, 1990). NCATE (1994), NASDTEC (1989), and Ohio Standards (1994) call for course work in the area of teaching and learning theory. Additionally, course work has been recommended by NCATE in the area of multicultural education and how to deal with individual learning needs in a multicultural context. Twelve semester hours (9 percent) of course work will be included, with specific courses as follows: methods of teaching agriculture, psychology of learning, working with special needs students, and multicultural education.

The following provides a brief description of humanistic and behavioral studies courses to be completed by students:

Methods of Teaching Agriculture - Development of the understanding of teaching and learning in formal and informal settings, examination of the learning process with emphasis of planning for instruction, and the use of appropriate methods for teaching in agriculture.

Psychology of Learning - Study of the principles of learning and how the learning process affects how students grow and develop as learners

Working With Exceptional Children - An overview of children as exceptional learners include a discussion of their characteristics and a review of historical approaches to their education and of contemporary educational practices.

Multicultural Education - Study of the global and cultural aspects of education, including recognizing cultural differences in students, selecting teaching methods for diverse classrooms, and developing an appreciation for cultural diversity.

The final area to be addressed in the professional studies component of the

practicum. The practicum component is the most valuable and educational part of the teacher education program, The practicum component of the teacher education program can be a great time of joy, expectations, trepidation, and fear (Lara-Alecio & Randon, cited in Sieck, 1995).

Preservice teachers must have field experiences that free them from impulsive and routine activities (Hopkins, cited in Sieck, 1995). Field experiences should be reflective in nature and provide structure and encouragement for preservice teachers to think about and give it serious and consecutive consideration so they (preservice teachers) may act in a deliberate and intentional manner (Hopkins, cited in Sieck, (1995). Field experiences should also provide students an opportunity to develop and practice skills in multicultural education.

The practicum component will consist of an early field experience and student teaching. Early field experience will be conducted during the sophomore year. Students will spend a total of 30 clock hours in schools that have exemplary agricultural education programs. To provide preservice students with a variety of experiences, 15 clock hours will be spent in a school located in a urban/suburban setting and 15 hours will be spent in a school located in a rural setting. Students completing the early field experience will observe classroom instruction and assist teachers in performing day-to-day activities within the department. Students would not be allowed to teach lesson in a classroom or laboratory setting, but they may assist in laboratory and classroom supervision. Students would also be expected to observe and assist the agricultural education teacher with an FFA activity and observe the teacher making a home supervised agricultural experience program (SAEP) visit.

The student teaching internship will be final component completed by preservice students. The student teaching internship will be conducted during the final semester prior to certification. During the first four weeks of the semester, students teachers would complete two course before reporting to the student teaching site: Curriculum Development in Agricultural Education and Program Planning in Agricultural Education. This will allow students to develop lesson plans and program plan for their student teaching site.

The student teacher will spend ten weeks at the student teaching center and be expected to complete 300 hundred clock hours of teaching and observational experiences. During the student teaching program, student teachers will participate in activities and experiences that will allow them to develop skills and practice knowledge acquired from previous course work. During the student teaching program, student teachers should:

(1) combine the philosophies of agriculture and education with a knowledge of today's society in forming professional beliefs;

(2) develop and use educational philosophy when making instructional decisions;

(3) assume responsibility and code of ethics appropriate to the professional role of a teacher;

(4) become aware of educational trends and implications that have relevance for the agricultural education program;

(5) use information about learners, their home, the community, and the larger society when planning the agricultural education program;

(6) organize learning into a sequential and integrated pattern to meet the needs of the learner;

(7) plan the agricultural education program which contributes to the educational goals of the school system;

(8) use the principles of learning when implementing classroom instruction or other educational activities;

(9) select and direct a variety of learning experiences appropriate to the achievement of objectives;

(10) establish and maintain a classroom climate which facilitates learning; and

(11) use evaluation as an integral part of the teaching and learning process (Henderson, 1995).

During the student teaching experience, student teachers would complete a variety of assignments that prepare students for their roles as future agricultural education teachers. Such assignments would include:

(1) Developing public relations activities (news releases, radio spots, etc) for the agricultural education program;

(2) Participate in a mock interview with a school administrator as if your were applying and interviewing for a teaching position in the school district;

(3) Observe other classroom teachers within the school, including other vocational education teachers and science teachers to understand how agriculture and science relate when planning instruction;

(4) Interview a local extension agent to understand how the agricultural education teacher and extension agent can work together in the community;

(5) Visit and observe a first-year teacher to see what strengths and weaknesses they are experiencing during their first year;

(6) Conduct on-site instructional supervised agricultural experience program (SAEP) visits (home work place, school lab);

(7) Compile a list of FFA, school, and community activities participated in during the student teaching experience; and

(8) Maintain a file of all lesson plans, handouts, tests, and quizzes used during the student teaching experience.

Table 4 presents a suggested year by year schedule of courses for students. One may not be able to take courses when recommended due to scheduling conflicts, course

load, and work schedules.

Table 4 Semester by Semester Schedule for Preservice Students

	Fall Semester	Spring Semester
Freshman:	English (3) Calculus (3) Biology (4) American History (3) Introduction to Horticulture (3) Total - 16 hours	Literature (3) Statistics/Data Analysis (3) Biology (4) Political Science (3) Introduction to Animal Science (3) Foundations of Ag Ed (1) Total - 17 hours
Sophomore:	Oral Communication (3) Philosophy (3) Chemistry (4) Rural Sociology (3) Introduction to Crop Science (3) Early Field Experience (2) Total - 18 hours	Visual/Performing Arts (3) Social Foundations of Educ. (3) Physics (4) Introduction to Ag. Economics (3) Environmental Science and Mgt (3) Total - 16 hours
Junior:	Multicultural Education (2) Psy. Foundations of Education (3) Small Engines (3) Soil Science (3) Leadership/Work Experience (3) Philosophy of Education (3) Total - 17 hours	Principles of Meat Science (2) Psychology of Learning (3) History of Education (2) Ag Construction Processes (4) Animal Nutrition (3) Greenhouse Management (3) Total - 17 hours
Senior:	Methods of Teaching Agriculture (4) Special Needs Students (3) Laboratory Management (3) Ag Business Management (3) Livestock Management (3) Total - 16 hours	Curriculum Development (2) Program Planning (2) Student Teaching (12) Total - 16 hours

SECTION THREE

INSTRUCTION

The purpose of this proposal is to recommend a preservice teacher education program in agriculture that prepares teachers to incorporate more science and business oriented concepts and principles into the agriculture curriculum. Preservice teachers should receive instruction and encounter hands-on experiences that will prepare them adequately and properly to teach science and business concepts as they relate to agriculture. College instructors should use instructional techniques that will provide preservice students with opportunities to learn and experience such techniques.

Following the development of the curriculum, the next step is to select instructional alternatives to effectively deliver course content. Effective presentation of the developed preservice teacher education curriculum through various teaching methods is crucial if preservice students are to internalize the knowledge, skills, and attitudes needed to function as an agricultural education teacher (Raven, 1989).

Teaching method has been defined as all that teachers think and do from the time they decide to teach something to someone until the time they decide that the teaching is over (Cruickshank, 1985). Cruickshank (1985) further stated that teaching method includes what teachers do when preparing to instruct, actually instructing, and analyzing and evaluating instruction. Broudy (1963) defined teaching methods as the formal structure of the sequence of acts commonly denoted by instruction. Twenty-three instructional alternatives were identified by Cruickshank that teacher educators could use to prepare preservice students with the knowledge, skills, and attitudes to become successful teachers.

Because there are so many different instructional alternatives available to use, one must be able to select the most appropriate instructional alternative in delivering topics addressed in the preservice curriculum. Deciding how instruction will take place requires that teacher educators be aware of alternatives available and with their potential for achieving desired learning outcomes (Cruickshank, 1985). Tobias (1982) recommended selecting the most effective instructional alternative such that students will be stimulated to actively attempt to comprehend the material, organize what is learned with what has been learned previously, and relate it to their prior experience.

New instructional alternatives are available to use today in teacher education than when Cruickshank developed his list in 1985. Distance education is becoming more widely used today in higher education and can be a plausible alternative if an institution lacks expertise for teaching a particular topic or subject. It is also a plausible alternative to use if students desire to study off-campus. Other instructional alternatives that are becoming more widely used in higher education include computer assisted instruction and interactive video.

NCATE (1994) and NASDTEC (1989) standards both address the topic of instruction and provide guidance in the selection of instructional alternatives. NCATE (1994) requires that teaching in the unit is consistent with the conceptual frameworks, reflects knowledge derived from research and sound professional practice, and is of high quality. NCATE (1994) further states that faculty should use a variety of instructional strategies that reflect an understanding of different models and approaches to learning. Specifically, instruction should encourage candidates' development of reflection, critical thinking, problem solving, and professional dispositions. NASDTEC (1989) requires that

institutions to provide evidence the faculty use effective instructional methods as well as both real and simulated experiences in clinical and laboratory contexts.

Cruickshank (cited in Cruz, 1995) presented a framework that classifies instructional alternatives as a function of types of experiences involves and use of reality. There are three types of experiences: concrete, vicarious and abstract. Concrete experiences are direct, first-hand experiences that students participate in. Students participate in either real or models of real experiences. Maximum student learning should occur with these types of experiences. Vicarious experiences are indirect, second-hand experiences where students learn from recordings of reality of recordings of a model of reality. Abstract experiences are experiences which have no or no use of reality or a model to it. Figure 1 illustrates Cruickshank's (cited in Cruz, 1995) model. Using this framework, the various instructional alternatives identified by Cruickshank (1985) and other alternatives used can be classified into one of the five categories - concrete real, concrete modeled, vicarious real, vicarious modeled or abstract (Figure 2).

Agricultural teacher educators have little control to no influence over instructional alternatives used in the preservice teacher education curriculum, except for courses offered through the agricultural education department. To provide guidance to other departments that help provide instruction to preservice agricultural education students, agricultural education faculty members can conduct and disseminate research on the effectiveness of instructional alternatives. Agricultural education faculty members can also become proactive and conduct teaching strategies workshops within Colleges of Agriculture for other college faculty members to discuss which alternatives work best and how to effectively use such alternatives. Cross-referencing Tables 1, 2, and 3 with Figure 2 aids in identifying instructional alternatives for the preservice agricultural education

curriculum (Tables 5, 6, and 7) in relation to the roles of teachers. Tables 8, 9, 10, and 11 show specific instructional alternatives recommended to specific courses of the preservice teacher education curriculum in agriculture.

Figure 1 Instructional Alternatives Whereby Teaching Knowledge, Skills, and Attitudes Can Be Learned

Context of Experience (Real or Modeled)

	Real Reality is Used	Modeled A Model of Reality
Concrete, Direct, First-Hand Experience	Field experience wherein the teacher education student learns the ability concretely in situations. -Teaching	Laboratory experience wherein the teacher education student learns the ability while he/she engages with a model of reality. -Microteaching -Reflective Teaching -Simulators -Simulation games -Role Playing/Skits
Vicarious, Indirect, Second-Hand Experience	Field or classroom experience wherein the teacher education student learns the ability vicariously from reality or from a recording of reality. -Observing teacher -Protocols -Documentary films -Case Studies -Still Pictures -Books -Non-fiction tape recordings	Classroom experience wherein the teacher education student learns the ability vicariously from a recording of a model of reality. -Film, fiction -Book, fiction
Abstract	Classroom experiences wherein the teacher education student learns the ability abstractly with little or no use of reality or a model of it. Emphasis is mainly on verbally communicating the knowledge, skill, or attitude. -Academic contests or competitions, brainstorming, case studies, debates, discussions, lecturing, oral reports, projects, recitations, team learning, etc.	

Source: Cruickshank, D. R., The Ohio State University

Figure 2 Specific Methods Suited to Instructional Alternatives

Context of Experience (Real or Modeled)

	Real	Modeled
Concrete	Student teaching Early field experience	Microteaching Reflective teaching Simulations Problem solving Experiments
Vicarious	Audiovisuals Demonstrations Observations Displays Exhibits	Audiovisuals Readings Computer assisted instruction
Abstract	Lecture Discussion Debates Programmed instruction Reports and writings Distance learning	

Table 5. Instructional Alternatives for the General Education Component of the Preservice Agricultural Education Curriculum

Courses	Role Developed	Instructional Alternatives
General Education (46 semester hours)		
Arts and Humanities (15 semester hours)		
English and Writing Skills (3)	F U D A E	4 5
Visual and Performing Arts (3)	F U	3 4 5
Oral Communication (3)	F D A E R	3 4 5
Philosophy (3)	F U E	5
Literature (3)	F U E	3 4 5
Mathematics and Statistics (6 semester hours)		
Calculus (3)	F D A	4 5
Statistics/Data Analysis (3)	F D A	2 4 5
Natural Science (16 semester hours)		
Biology (8)	F D E	2 3 4 5
Chemistry (4)	F D E	2 3 4 5
Physics (4)	F D E	2 3 4 5
Social Science (9 semester hours)		
American History (3)	F U	3 5
Political Science (3)	F E	3 5
Rural Sociology (3)	F U	3 5

Key: Roles of Teachers:
F = Facilitator of Learning
U = Understander of Learner
D = Program Developer
A = Administrator
E = Professional Educator
R = Role Model and Mentor

Instructional Alternatives:
1 = Concrete Real
2 = Concrete Modeled
3 = Vicarious Real
4 = Vicarious Modeled
5 = Abstract

Table 6. Instructional Alternatives for the Content Studies Component of the Preservice Agricultural Education Curriculum

Courses	Role Developed	Instructional Alternatives
Content Studies (50 semester hours)		
Technical Agriculture (39 semester hours)		
Small Engines (3)	F D	2 3 5
Agricultural Construction Processes (4)	F D	2 3 5
Introduction to Agricultural Economics (3)	F D	2 3 4 5
Principles of Agribusiness Management (3)	F D	2 3 4 5
Introduction to Crop Science (3)	F D	2 3 5
Soil Science (3)	F D	2 3 4 5
Introduction to Animal Sciences (3)	F D	2 3 5
Principles of Animal Nutrition (3)	F D	2 3 5
Livestock Management (3)	F D	2 3 4 5
Introduction to Horticulture (3)	F D	2 3 5
Greenhouse Management (3)	F D	2 3 5
Environmental Science and Management (3)	F D	2 3 5
Principles of Meat Science (2)	F D	2 3 5
Agricultural Education Professional Component (11 semester hours)		
Foundations of Agricultural Education (1)	F U D A E R	3 5
Curriculum Development in Agricultural Education (2)	F U D A E	2 3 4 5
Program Planning in Agricultural Education (2)	F U D A E R	2 3 5
Leadership Development and Work Experience in Agriculture (3)	F U D A E R	2 3 5
Laboratory Management in Agricultural Education (3)	F U D A E	2 3 5

Key:

Roles of Teachers:
- F = Facilitator of Learning
- U = Understander of Learner
- D = Program Developer
- A = Administrator
- E = Professional Educator
- R = Role Model and Mentor

Instructional Alternatives:
- 1 = Concrete Real
- 2 = Concrete Modeled
- 3 = Vicarious Real
- 4 = Vicarious Modeled
- 5 = Abstract

Table 7. Instructional Alternatives for the Professional Component of the Preservice Agricultural Education Curriculum

Courses	Role Developed	Instructional Alternatives
Professional Studies (37 semester hours)		
Humanistic and Behavioral Studies (11 semester hours)		
Philosophy of Education (3)	D A E R	4 5
History of Education (2)	A E R	3 4 5
Psychological Foundations of Education (3)	F U D A E R	3 4 5
Social Foundations of Education (3)	F U D A E	3 4 5
Teaching and Learning Theory (12 semester hours)		
Methods of Teaching Agriculture (4)	F U D	2 3 4 5
Psychology of Learning (3)	F U D	2 3 4 5
Working with Exceptional Children (3)	F U D A	2 3 4 5
Multicultural Education (2)	F U D A	2 3 4 5
Practicum (14 semester hours)		
Student Teaching (12)	F U D A E R	1 3
Early Field Experience (2)	F U D A E R	1 3

Key:

Roles of Teachers:
- F = Facilitator of Learning
- U = Understander of Learner
- D = Program Developer
- A = Administrator
- E = Professional Educator
- R = Role Model and Mentor

Instructional Alternatives:
- 1 = Concrete Real
- 2 = Concrete Modeled
- 3 = Vicarious Real
- 4 = Vicarious Modeled
- 5 = Abstract

Table 8 Specific Instructional Alternatives Recommended for Instruction of General Education Courses in the Preservice Curriculum

	Student Teaching	Early Field Experience	Microteaching	Reflective Teaching	Simulations	Problem Solving	Experiments	Audiovisuals	Demonstrations	Observations	Displays and Exhibits	Audiovisuals	Readings	CAI	Lecture	Discussion	Debate	Reports	Distance Education
English												X	X		X	X	X	X	
Visual/Performing Arts								X	X		X				X	X			
Oral Communication									X	X		X			X	X	X	X	
Philosophy															X	X	X		
Literature								X			X	X	X		X	X	X		
Calculus						X								X	X	X			
Statistics/Data Analysis						X								X	X	X			
Biology							X		X	X	X				X	X			
Chemistry							X		X	X	X				X	X			
Physics							X		X	X	X				X	X			
American History								X			X				X	X		X	
Political Science								X			X				X	X		X	
Rural Sociology								X			X				X	X		X	X

Table 9 Specific Instructional Alternatives Recommended for Instruction of Technical Agriculture Courses in the Preservice Curriculum

	Student Teaching	Early Field Experience	Microteaching	Reflective Teaching	Simulations	Problem Solving	Experiments	Audiovisuals	Demonstrations	Observations	Displays and Exhibits	Audiovisuals	Readings	CAI	Lecture	Discussion	Debate	Reports	Distance Education
Small Engines						X	X	X	X	X					X	X			
Agricultural Construction Processes						X		X	X	X		X			X	X			
Introduction to Agricultural Economics						X				X			X		X	X		X	
Principles of Agribusiness Management						X				X			X		X	X		X	
Introduction to Crop Science								X			X				X	X			
Soil Science						X	X	X							X	X			
Introduction to Animal Sciences								X			X				X	X			
Principles of Animal Nutrition						X	X	X							X	X			
Livestock Management						X	X	X	X	X					X	X			
Introduction to Horticulture								X		X	X				X	X			
Greenhouse Management						X		X	X		X				X	X			
Environmental Management and Science								X							X	X			X
Principles of Meat Science								X	X		X				X	X			

Table 11 Specific Instructional Alternatives Recommended for Instruction of Professional Education Courses in the Preservice Curriculum

	Student Teaching	Early Field Experience	Microteaching	Reflective Teaching	Simulations	Problem Solving	Experiments	Audiovisuals	Demonstrations	Observations	Displays and Exhibits	Audiovisuals	Readings	CAI	Lecture	Discussion	Debate	Reports	Distance Education
Philosophy of Education													X		X	X	X		
History of Education								X			X		X		X	X		X	
Psychological Foundationa of Education													X		X	X		X	
Social Foundations of Education										X			X		X	X		X	
Methods of Teaching Agriculture			X	X	X	X			X	X					X	X			X
Phychology of Learning						X				X		X			X	X		X	
Working With Exceptional Children			X	X	X	X			X	X			X		X	X		X	
Multicultural Education						X				X		X	X		X	X			X
Student Teaching	X																		
Early Field Experience		X																	

Table 10 Specific Instructional Alternatives Recommended for Instruction of Agricultural Education Professional Courses in the Preservice Curriculum

	Student Teaching	Early Field Experience	Microteaching	Reflective Teaching	Simulations	Problem Solving	Experiments	Audiovisuals	Demonstrations	Observations	Displays and Exhibits	Audiovisuals	Readings	CAI	Lecture	Discussion	Debate	Reports	Distance Education
Foundations of Agricultural Education											X		X		X	X	X	X	
Curriculum Development in Agricultural Education						X									X	X		X	
Program Planning in Agricultural Education						X									X	X		X	
Leadership Development and Work Experience in Agriculture						X		X		X		X			X	X		X	
Laboratory Management in Agricultural Education						X			X	X	X				X	X		X	

SECTION FOUR

RESOURCES AND FACILITIES

Resources and facilities used to prepare preservice agricultural education teachers should reflect the needs and trends of agricultural education. With more science and business concepts and principles being incorporated into the agriculture curriculum, preservice students need experiences in facilities that will prepare them with the knowledge and skills needed to teacher their students in such facilities. However, many agricultural education departments at the university level will not have adequate facilities housed within their department to provide their students with diverse experiences needed, so they must rely on other resources and facilities within the College and University to provide such experiences.

Many agricultural education departments are located within Colleges of Agriculture today rather than Colleges of Education. Peters and Moore (1984) reported that agricultural education programs receive much stronger support when housed in a College of Agriculture than when housed in a College of Education. Furthermore, agricultural education departments housed in Colleges of Agriculture are eligible for more flexible funding, especially if they are at a Land-Grant university (Torres and Garton, 1991). Raven (1989) noted that agricultural education departments located in Colleges of Agriculture were eligible for additional federal funding through agricultural experiment stations.

NCATE (1994) and NASDTEC (1989) both address the need for adequate resources and facilities when conducting a teacher education program. NCATE (1994) standards require that teacher education units have adequate resources to support

teaching and scholarship by faculty and candidates. Indicators of these resources include:

(1) support for professional development being at least at the level of other units in the institution;

(2) faculty have well-maintained and functional offices, instructional, and other space to carry out their work effectively;

(3) faculty and candidates have training in and access to education-related electronic information, video resources, computer hardware, software, related technologies, and other similar resources;

(4) Library resources provide adequate scope, breadth, currency, and multiple perspectives; they are systematically reviewed to make acquisition decisions;

(5) Media, software, and materials collections are identifiable, relevant, accessible, and systematically reviewed to make acquisition decisions; and

(6) there are sufficient library and technical staff to support the library, instructional materials collection, and media/computer support services.

NCATE (1994) also addresses the need for resources for operating the teacher education unit. Teacher education units should have sufficient facilities, equipment, and budgetary resources to fulfill its mission and offer quality programs. Specific indicators NCATE (1994) would look for when evaluating teacher education units would include:

(1) budget trends over the past five years and future planning indicate adequate support for the programs offered in professional education;

(2) resources are allocated to programs in a manner that allows each of them to meet its expected outcomes; and

(3) facilities and equipment are functional and well-maintained. They support computing, educational communications, and educational and instructional technology at least at the level of other units in the institution.

NASDTEC Standards (1989), while not as specific as NCATE Standards, still make recommendations regarding physical facilities, instructional materials and supplies, and other resources essential for conducting programs for the preparation of educational

personnel. Four standards for accreditation are identified. These standards include:

(1) physical plant meets the instructional, cultural, health, and safety needs of the students;

(2) library/media centers are appropriately equipped, professionally administered and managed to provide instructional, research, and support services for both faculty and student. Administrative procedures and retrieval methods reflect current practice and use of mediated instructional systems and technology;

(3) institution provides space, equipment, supplies, and laboratories needed for each instructional program. Instruction in the production and use of materials and equipment is ongoing; and

(4) curriculum laboratory and professional materials center contains collections that are current and appropriate to the school systems, the programs offered, and the age-grade levels of preparation.

Just like with instructional alternatives, agricultural teacher educators have little control or influence over resources and facilities outside their department. The proposed preservice teacher education program in agriculture recommended by this author will address only facilities and resources needed for courses, faculty, and staff with the agricultural education department.

Torres and Garton (1991) recommended the following framework for planning and organizing resources and facilities for agricultural education departments: instructional facilities, support facilities, instructional equipment, and off-campus facilities. Each one of these components will be described in detail in relationship to the agricultural education program.

Instructional Facilities

To provide agricultural education majors an opportunity to develop skills that will be used in a high school agricultural education classroom, it is suggested that the agricultural

education department have their own classroom that resembles a typical high school classroom. Equipment requirements that would be needed include: student tables and chairs, teacher podium/lectern, projection screen, chalkboard, audio-visual equipment (overhead projector, slide projector, VCR, television), storage cabinets, bulletin board, dark shades, a computer and an LCD panel. Using a computer with the appropriate presentation software, like Powerpoint or WordPerfect Presentations, can make presentations more exciting and provide an opportunity to emphasize and highlight certain points during a presentation. This would also make revising presentations from year to year easier to do.

With an increased emphasis on distance education today, the agricultural education department needs a way to be able to downlink satellite programs that will benefit preservice teacher education students. Agricultural teacher educators should establish working relationships with communications personnel within their College or University to discuss ways of downlinking and/or videotaping programs and courses that will help instruct preservice students.

Laboratories are also needed for instructional purposes. When teaching agriculture at the high school level, teachers will use many different types of laboratories to provide students opportunities for learn and practice skills. Such laboratories include land/livestock laboratories, landscape and turf laboratories, greenhouse and horticultural production laboratories, biotechnology laboratories, aquaculture laboratories, food science laboratories, computer/agribusiness/CAD laboratories, and production agriculture laboratories (Miller, 1993). Laboratories at the university level being used to prepare students to teach agriculture should contain the most up-to-date equipment to provide the

full range of instructional alternatives and prepare students properly with the correct knowledge, skills, and abilities to teach students. Maintaining such laboratories would be very costly for an agricultural education department. Because such facilities would already exist in other departments within the College and University, reciprocal agreements should be established with the necessary departments so these facilities can be used for carrying out instructional activities in the preservice curriculum for teacher preparation. The would only include laboratories relating to agriculture, but science as well. Agriculture teacher educators should establish working relationships with science education faculty on preparing students to provide instruction in agriscience laboratories.

Support Facilities

Various types of support facilities are needed to make a complete agricultural education program. Support facilities include office space for faculty, secretarial staff, and graduate assistants, library (college and departmental), computer laboratory, conference room, study area and lounge. Offices that are conducive for carrying out planning, research and student advising will be provided for each faculty member. These offices will also foster the general welfare of the faculty. Graduate students who are on appointment in the department and serve as teaching assistants for professional education courses within the department will also be furnished office space. Secretarial staff within the department will be provided adequate space and up-to-date equipment to perform their assigned tasks. Faculty members and graduate students will also be provided up-to-date equipment to perform their duties effectively and efficiently (computers and peripherals, telephones, fax machine, telecommunications peripherals, etc.).

Within the College should be a library. While the agricultural education department

will likely have very little control of the library, faculty members within the department should periodically make recommendations to the librarian as to what periodicals and references should be obtained. The most up-to-date references and periodicals should be housed in the library to provide preservice agricultural education students with them most up-to-date information.

Agricultural education departments should also have their own departmental library. This library should contain references that preservice agricultural education students can use to prepare courses of study and lesson plans for teaching laboratories and student teaching. Master's theses, doctoral dissertations, and professional periodicals and journals should also be located in this library to provide up-to-date research and information on various aspects of agricultural education. Video monitors and video tapes on microteaching, effective teaching, and trends in agriculture and agricultural education, should also be stored in the departmental library for preservice students to observe.

A computer laboratory should also be made available for preservice students. Both Macintosh and IBM compatible computers should be available with various types of software (wordprocessing, spreadsheet, graphics, presentation, etc.) for students to use to complete assignments for classes and make class presentations. This laboratory should also be carefully monitored to see that students do not abuse the equipment.

Instructional Equipment

The following instructional equipment will be required for departmental use: cassette tape recorders, slide projectors, overhead projectors, microcomputers, photo copy machine, video monitors, video cassette camera, television, and LCD panel.

Off-Campus Facilities

High school agricultural education departments are needed to provide early field experiences for preservice students and to serve as student teaching centers. The location of agricultural education departments should not be the major criteria when placing students. The following would be the criteria used to select sites for early field experiences and/or student teaching centers:

(1) the school has an agricultural education program approved by the State Department of Education;

(2) the teacher possesses the appropriate teaching certificate and has a minimum of three years of teaching experience, with at least two years at the current school;

(3) the teacher accepts the responsibility for supervising early field experience participants and/or student teachers as outlined in the Early Field Experience and Student Teaching Handbooks;

(4) the teacher has participated in an inservice seminar concerning the supervision of early field experience participants and/or student teachers conducted by the Department of Agricultural Education;

(5) the teacher participates regularly in professional improvement activities;

(6) the cooperating teacher uses an approved course of study with supporting instructional materials, including books, manuals, study guides, and audio visual materials;

(7) the cooperating teacher us willing to schedule and devote additional time to assist student teachers in planning for instruction and evaluating performance;

(8) the cooperating teacher is willing to review all lesson plans prior to each class taught by the student teacher and to regularly critique the teaching performance of his/her student teacher; and

(9) the appropriate school administrator approves using the teacher and agrees to the provisions of the contract outlined by the school and the Department of Agricultural Education.

Funding Sources

An area that still needs to be addressed is that of funding for the agricultural education department. Adequate funds are needed to have sufficient faculty, support staff, and administrators. Funds are also needed to allow faculty members and graduate students to attend professional meetings and conferences (Raven, 1989). To keep up-to-date references and periodicals in the departmental library, funds need to be allocated each year for this purpose. Adequate funding is also required for maintenance and improvement to physical facilities and equipment, material, and supplies used within the department.

Each year, faculty members should provide input to the department chair for items to be included in the departmental budget, even though the final decision on the allocation of funds will rest with the Dean of the College. The Department should also make projections on equipment and supplies that will be needed in the future to assist in making future budgets for the department.

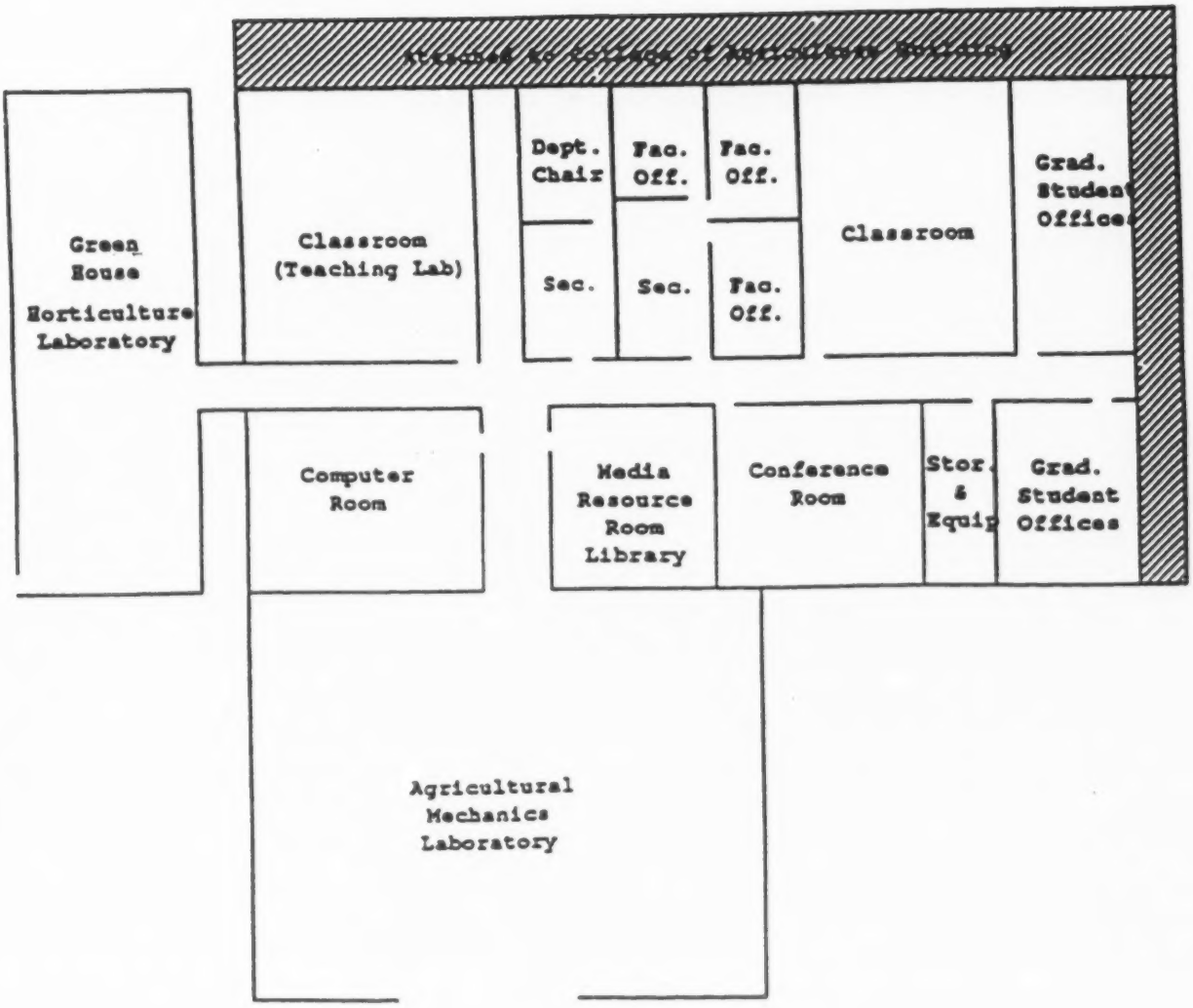
Table 12 presents the resources and facilities required for an agricultural education program and the roles each addresses. Figure 3 presents a proposed agricultural teacher education facilities to prepare preservice students in the next century.

Table 12 Resources and Facilities Required in the Agricultural Education Department For The Preparation of Teachers

Facilities/Equipment	Roles Addressed
Instructional Facilities	
Agricultural Education Classroom	F U D A E R
Ag Mechanics Laboratory	F U D A
Greenhouse	F U D A
Agriscience Laboratory	F U D A
Support Facilities	
Conference Room	A E R
Study Room	F U D E
Computer Laboratory	F D A E
Faculty Offices	A R
Graduate Student Offices	F E R
Secretarial Offices	A
Agricultural Library	F U D A E R
Agricultural Education Library	F U D A E R
Instructional Equipment	
Computers	F D A E
Overhead projectors	F A
Slide projectors	F A
Photo copy machine	D A
Audio visual equipment	F D A
Chalkboards	F D A
Off-Campus Facilities	
Agricultural Education Departments	F U D A E R

Key: Roles of Teachers:
F = Facilitator of Learning
U = Understander of Learner
D = Program Developer
A = Administrator
E = Professional Educator
R = Role Model and Mentor

Figure 3. Proposed Agricultural Teacher Education Facility



Source: Torres, R. & Garton, B. A program for the preparation of teachers of agriculture.

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SECTION FIVE

STUDENT SELECTION

When recruiting and selecting students for the preservice teacher education program in agriculture, one must look at factors other than a student's background in agriculture. With more of an emphasis being placed on science literacy and business in agriculture today, preservice teachers in agriculture recruited, selected, and retained into the teacher education program need to have stronger backgrounds both in science and business.

A recent concern in the teaching profession has been the lack of quality teachers. Teaching quality has become a major concern for education in the United States (Nelson, 1985). Many college students who would make excellent teachers choose other careers because of many factors. Such factors include poor working conditions in education, lack of opportunities for advancement, and low teacher salaries. If students are to receive a quality education in the future that prepares them with skills and competencies needed to secure entry-level employment or seek further education, the quality instruction in our schools is essential. For quality instruction to occur in our schools, teacher education programs must recruit and select quality individuals to see teaching degrees.

What types of individuals have been seeking degrees in education in the past? The National Commission on Excellence in Education (1983) found that many teachers came from the bottom percentile of their high school graduating class. Sykes (1983) found that education majors tended to score lower on a variety of admission measures, such as the Scholastic Aptitude Test (SAT). For those individuals who would receive degrees in education, those who tended to score higher on measures of academic ability would leave

the teaching profession early while those who scored low on measures of academic ability would tend to remain in the profession (Vance and Schlechty, 1982).

To resolve the problem of having quality teacher education candidates, teacher education programs have raised admission standards (Laman and Reeves, 1983). Also state legislatures have enacted laws, state boards of education have issued mandates, and teacher education institutions have launched other initiatives with the hopes of attracting quality candidates into teacher education (Laman and Reeves, 1983). However, there has been a lack of consensus on what should be the admissions criteria should be.

Within the agricultural education profession, many questions have been raised about the quality of teachers. Raven (1989) posed the question, "Are future teachers of agricultural education coming from the ranks of the most competent high school graduates who enroll in colleges of agriculture or are the most talented agriculture students seeking different career opportunities?" McCoy and Mortenson (1983) found that those graduates who left teaching were less academically able than those who remained in teaching and graduates who did not enter the teaching profession had a lower GPA than those who entered teaching. Wardlow (1986) concluded that agricultural education graduates did not significantly differ from other agriculture graduates in measures of academic ability including high school GPA, high school rank, cumulative college GPA, social science GPA, content area GPA, and ACT scores. Muller and Miller (1993) found that there were no significant differences between graduate who entered teaching and those who did not teach on ACT scores, graduation GPA, GPA at the time of admission to teacher education and high school rank.

The agricultural education profession continues to face a shortage of quality

teachers today. Camp (1995) concluded that 11 states at the beginning of the 1993-94 school year lacked enough agricultural education teachers to begin the year. If our profession continues to lack enough agricultural education teachers to begin the school year, this it is important that recruitment and selection be directed toward the common goal of producing effective and competent agricultural education teachers (Annis and Paul, 1981). Once quality students have been recruited and selected into the preservice teacher education program, they must be retained. Agricultural education departments should develop strategies to retain quality students in the program as well.

Recruitment

Agricultural education departments can develop a program to proactively recruit potential high school agricultural education teachers into their programs. Agricultural education should recruit not only high school students, but also lower division college students who possess superior academic abilities and social skills (Raven, 1989). As agricultural education continues to emphasize science and business principles and concepts, it is more imperative that quality teachers are recruited with strong backgrounds both in science and agriculture.

Table 13 presents a list of recruitment strategies that agricultural education departments should employ to recruit qualified agricultural education students. This list is developed by reviewing reports from Berkey (1981); Lee (1978); Cole (1985); Hillison, Hagee and Paullette (1982); and Miller (1984). The roles of agricultural education teachers are also addressed with these suggested recruitment practices.

Table 13. Recruitment Strategies Recommended to Recruit Potential Preservice Students in Agricultural Education

Recruitment Strategy	Roles Addressed
High school, community college, and university staff should be made aware of opportunities for agricultural education teachers.	E
Recruit students at agricultural work sites	F D A E
Recruit minority students into agricultural education program	F U
Establish scholarships to recruit minority students into agricultural education	F U
Agricultural education teachers should use potential students as teachers aides	F E R
Show agricultural education teachers working with youth in recruitment materials	F U D E R
Contact parents of students who do well in agriculture program	F E R
Contact students who do well in agriculture program	F E R
Use selective mailings with potential graduating seniors	F E R
Establish a recruitment committee in the professional teachers organization	E R
Teach one unit in a professional education course about the teacher's role in recruitment	E
Construct and exhibit displays at state conventions, fairs, shows, and other public activities	F D A E R
Have one faculty member in charge of recruitment of potential teacher	E R
Encourage all faculty members and graduate students to recruit potential agricultural education teachers	E R
Invite potential students to campus for a visit	E R

Key: F = Facilitator of Learning
D = Program Developer
E = Professional Educator
U = Understander of Learner
A = Administrator
R = Role Model and Mentor

NCATE (1994) further documents that teacher preparation programs should recruit, admit, and retain a diverse student body. Specifically, teacher education units should:

(1) have and implement an explicit plan with adequate resources to recruit, admit, and retain a diverse student body;

(2) demonstrate efforts and success in meeting goals for recruiting candidates from culturally diverse backgrounds and evaluate annually, and take appropriate steps to strengthen such a plan in the future;

(3) ensure that the study body is culturally diverse; and

(4) ensure that the student body includes males and females from two or more of the following groups: White, not Hispanic; Black, not Hispanic; Asian or Pacific Islander; Native American; or Other.

Selection

Once potential students are recruited into the teacher education program, there still needs to be selection criteria that will admit students who best fulfill the roles of agricultural education teachers. The selection process of teachers begins with the termination of recruitment activities and ends with the certification of new teachers (Raven, 1989).

NCATE Standards (1994) addresses the recruitment, admission, and retention of teacher education candidates who demonstrate potential for professional success in schools. A comprehensive system should be used to assess the qualification of candidates seeking admission to the teacher education program. Specific criteria include:

(1) assessment of academic proficiency (e.g., basic skills proficiency test),

(2) faculty recommendations,

(3) biographical information, and

(4) successful completion of any prior college/university course work with at least a 2.5 grade point average (GPA) on a 4-point scale.

Students will be admitted into the teacher education program when they have completed 67 semester hours of coursework (at the end of their sophomore year or second year of enrollment). Students would be required to submit a portfolio consisting of the following information: completed application for admission, current college transcript of course work completed, appropriate test scores (ACT or SAT), writing sample, evidence of leadership abilities, evidence of oral communication skills, evidence of work experience in agriculture and science, and two letters of recommendation from faculty members who can fairly assess the student's potential as a teacher.

Once the portfolio has been submitted, the prospective teacher education student will be interviewed by a Teacher Education Screening Committee consisting of one agriculture teacher educator, one practicing agriculture teacher, one technical agriculture content specialist, and one graduate student in agricultural education. Admission to the teacher education program will be based on the following standards: college grade point average will be used to indicate scholarly ability, suitable attitudes toward teaching will be assessed from the student's grade in early field experience and cooperating teacher's recommendation, and grades in communications and writing courses and the interview will be used to assess verbal and written communication skills. Table 14 presents the criteria used to select students for admission into the teacher education program, method of assessment, and roles addressed.

Table 14. Criteria For Entry Into The Teacher Education Program in Agriculture

Criteria	Means of Assessment	Role Addressed
Minimum GPA of 2.5 (out of 4.0) on all college course work	College Transcripts	F U A E R
Evidence of suitable attitudes toward teaching	Early field experience performance	F U D A E R
Evidence of adequate verbal and written communication skills	Grades in communication and writing courses and interview	F A E R
Evidence of leadership skills	Documentation in portfolio	F U D A E R
Evidence of basic skills	ACT or SAT Scores	F U E R
Agricultural work experience	Documentation in portfolio	F E R
Experience in science	Grades in science Documentation in portfolio	F U D
Evidence of working with youth	Documentation in portfolio	F U E R

Key: F = Facilitator of Learning
U = Understander of Learner
D = Program Developer
A = Administrator
E = Professional Educator
R = Role Model and Mentor

Separate criteria will be used to select and admit preservice students into the student teaching program. Table 15 presents suggested admissions criteria, means of assessment, and roles addressed for teachers. A minimum GPA of 2.5 (on a 4-point scale) will be required to indicate scholarly ability. Students must also demonstrate effective teaching traits as identified by Rosenshine and Furst (1971), Dunkin and Biddle (1974), and Cruickshank (1990) through work samples from professional education courses. This can be either through recommendations of the course instructor or videotapes from microteaching labs. Evidence of effective teaching skills will also be assessed by work samples from professional education course work. Students must also demonstrate additional experience in agriculture and science as documented in their portfolio.

Table 15. Criteria For Entry Into The Student Teaching Program in Agricultural Education

Criteria	Means of Assessment	Role Addressed
Minimum GPA of 2.5 (out of 4.0) on all college course work	College Transcripts	F U A E R
Evidence of suitable attitudes toward teaching	Early field experience performance, committee recommendation	F U D A E R
Agricultural work experience	Documentation in portfolio	F E R
Experience and competence in science	Grades in science Documentation in portfolio	F U D
Evidence of effective teaching traits	Work Sample (videotape)	F U D E R
Evidence of effective teaching skills	Work sample, course grades, instructor recommendation	F U D A E R

Key: F = Facilitator of Learning
U = Understander of Learner
D = Program Developer
A = Administrator
E = Professional Educator
R = Role Model and Mentor

Retention

Once students have been selected and admitted to the teacher education program, NCATE (1994) recommends systematic monitoring and assessment procedures by implemented to assess the progress of candidates and ensure that they receive appropriate academic and professional advisement from admission through completion of their professional education programs. Indicators NCATE uses to assess monitoring and progress of candidates include:

(1) progress of candidates at different stages of programs is monitored through authentic performance based assessments using different systematic procedures and timelines;

(2) assessment a candidate's progress is based on multiple data sources that include grade point average (GPA), observations, the use of various instructional strategies and technologies, faculty recommendations, demonstrated competence in academic and professional work (e.g., portfolios, performance assessments, and research and concept papers), and recommendations from the appropriate professionals in schools;

(3) assessment data are systematically used to assist candidates who are not making satisfactory progress;

(4) ability of candidates to create meaningful learning experiences that are based on their general, content, professional, and pedagogical knowledge is assessed;

(5) criteria consistent with the conceptual frameworks of programs are used to determine eligibility for student teaching and other professional internships; and

(6) through publications and faculty advising, candidates are provided clear information about institutional policies and requirements needed for completing their professional education programs, the availability of social and psychological counseling services, and job opportunities.

NASDTEC (1989) also addresses criteria for selection and retention in teacher preparation programs. However, these standards are not as specific as NCATE (1994)

Standards on how to achieve this goal.

Once admitted into the teacher education program, preservice students must maintain a 2.5 GPA (on a 4-point scale). Should their GPA fall below a 2.5, preservice students would then be required to meet with their academic advisor and develop a plan to work on raising their GPA and developing study habits for the rest of their course work.

If preservice students really desire to become agricultural education teachers and their academic standing in college become unsatisfactory or below average, they must become committed to correcting their problems and improving their academic standing/ Agriculture teacher educators must also be committed to work with these students and help them improve their academic standing while enrolled in the program.

SECTION SIX

FACULTY SELECTION

The key to any successful preservice teacher education program is the selection of quality faculty. Miller (1988) stated that the quality of an agricultural teacher preparation program is a direct reflection of the faculty. Moore (1982) cited faculty reputation as an important factor in the decision making process for students in their selection of an agricultural education department.

Many education professionals have stated factors that should be considered when selecting faculty in teacher education. Howsam, Corrigan, Denemark, and Nash (1976) stated that faculty in teacher education programs should:

(1) be a liaison between the institution and public education;

(2) possess professional knowledge;

(3) be an exemplar to excellent teaching;

(4) have a broad view of the educational process;

(5) be able to link research to teaching;

(6) be committed to the professional preparation of teachers; and

(7) maintain a profound commitment to human rights.

Haberman and Stinnett (1973) characterized teacher education faculty as isolated, specialized, and diverse. Cruickshank (1990) characterized the education professorate as hard working and dedicated to teaching and advising.

McCormick (1985) stated that teacher education in agriculture is only as good as its undergraduate faculty. McCormick (1985) further stated four tenets of what teacher education should do regarding the faculty role in agricultural education. Agricultural

education:

(1) should utilize the best qualified, most effective, most dedicated, and motivated teacher educators at the undergraduate level;

(2) teacher educators in agriculture should set the example of good teaching and serve as models for programs in the field;

(3) teacher educators must provide service to teachers in the field; and

(4) teacher educators must be professional leaders and champion a team effort among agricultural education teachers, supervisors, and school administrators to guide agricultural education.

NCATE Standards (1994) set forth specific criteria regarding the selection of faculty for teacher education. NCATE Standards (1994) say that professional education faculty are teacher scholars who are qualified for their assignments and actively engaged in the professional community. Four indicators specified by NCATE regarding faculty qualifications include:

(1) professional education faculty have completed formal advanced study and have demonstrated competence through scholarly activities in each field of specialization that the teach;

(a) higher education faculty, both full-time and part-time, have an earned doctorate (or its equivalent) or have exceptional expertise in their field to qualify them for their assignments

(b) higher education faculty are knowledgeable about current practice related to the use of computers and technology and integrate them in their teaching and scholarship

(c) higher education faculty are knowledgeable about and have experience with teaching and learning, cultural differences and exceptionalities, and their instructional implications

(d) higher education faculty serving as dissertation and/or graduate advisors are competent in the candidate's research topic and/or methodology

(e) faculty who supervise field experiences have had preparation for this role and have had professional experiences in school settings

(f) school faculty are licensed, have at least three years of teaching experience in their field of specialization, and model good professional practice

(g) graduate students who teach or supervise field experiences are qualified in terms of formal study, experience, and training

(2) higher education faculty exhibit intellectual vitality in their sensitivity to critical issues (e. g., the ethics of equity and diversity in U.S. culture) and in their efforts to address the issues and become proactive in addressing them;

(a) the teaching, scholarship, and service of faculty demonstrate that they are teacher scholars

(b) faculty with assignments in advanced programs generate and disseminate new knowledge that is regularly reviewed and accepted by peers

(3) higher education faculty are actively involved with the professional wold of practice in P-12 schools, and are engaged in dialogue about the design and delivery of instructional programs; and

(4) higher education faculty are actively involved in professional associations and provide education-related services at the local, state, national and/or international levels in their areas of expertise and assignment.

NCATE (1994) also addresses the need to recruit, hire, and retain a diverse faculty.

Indicators for teacher education programs regarding the composition of faculty include:

(1) the unit had and implements an explicit plan with adequate resources to ensure hiring and retaining of a diverse faculty;

(2) the unit's efforts and success in meeting goals for recruiting a diverse faculty are evaluated annually, and appropriate steps are taken to strengthen plans for the future;

(3) the faculty is culturally diverse; and

(4) the unit's higher education faculty includes males and females and persons from two or more of the following groups: White, not Hispanic; Black, not Hispanic; Hispanic; Asian or pacific Islander; or Native American; or Other.

NASDTEC (1989) also sets forth criteria regarding faculty for teacher education programs. NASDTEC Standards (1989) regarding teacher education faculty include:

(1) faculty must have preparation and experience for their respective roles and responsibilities in teacher education programs;

(2) the institution must provide evidence of faculty participation in activities designed to promote continuous professional development;

(3) institutions should provide evidence that selection, retention, and promotion of personnel including the responsibilities that pertain to programs for the preparation of education personnel;

(4) the same criteria for academic preparation, experience, and scholarly performance are used for appointing full-time and p[art-time faculty;

(5) the institution provides evidence that clinical and field assignments are included in determining faculty load; and

(6) the institution provides evidence that faculty use effective instructional methods, educational technology, and measurement and evaluation procedures.

The Standards for Quality Vocational Programs in Agriculture/Agribusiness Education (1977) also advocate standards for the selection of agricultural education faculty. Specific standards include:

(1) seventy-five percent of the agricultural education faculty have an earned doctorate degree; 100 percent gave earned master's degrees in agricultural education or the equivalent;

(2) all faculty meet requirements for certification to teach vocational agriculture/agribusiness, including at least three years of successful teaching experience in vocational agriculture/agribusiness in the area or areas in which the faculty member is providing leadership;

(3) members of the agricultural education faculty have twelve-month appointments;

(4) faculty members have shown evidence of achievement in research and writing as measured by publications and research projects;

(5) faculty members have demonstrated leadership roles and are participating in professional organizations and state and national professional improvement meetings; and

(6) a minimum of two FTE faculty are employed to help students learn needed competencies in agricultural education, to advise students and to supervise intern experiences. One FTE faculty member is provided for each ten degree/certification recipients (B.S., M.S., Ph.D.) An equal number of FTE faculty members provide research and/or inservice functions.

Because of the increased emphasis in science today in agricultural education, preservice students need to receive instruction on how to incorporate science principles into the agricultural education curriculum. This may include instruction in science methods. If agriscience education is going to continue to be an integral part of the agriculture curriculum in the future, it is the recommendation of this author that agricultural education departments consider hiring one faculty member that has a science background. This individual can provide guidance in the development of the agriscience curriculum, provide instruction on how to integrate science principles into agriculture, and demonstrate how to set up, organize, and manage an agriscience laboratory.

Based on the recommendations of NCATE, NASDTEC, and the Standards for Quality Vocational Programs in Agriculture/Agribusiness Education, the following criteria for selection of faculty in the proposed agricultural education preservice teacher education program in agriculture is recommended. Table 16 presents the specific criteria, method of assessment, and roles of the teacher addressed.

Prospective faculty members seeking teacher education positions would be asked to submit a teaching portfolio which would contain evidence of them as a scholar, professional, teacher, and researcher. These portfolios would be reviewed by the committee appointed by the department chair to review and screen applications.

Agriculture teacher educators should have completed a minimum of three years of teaching experience. More years of teaching experience at the secondary level would be preferred. The potential faculty members teaching history would be reviewed as documented in their teaching portfolio. Potential faculty members should also possess effective oral and written communication skills in order to express their views and ideas to colleagues, students, and administrators (Torres and Garton, 1991).

Prospective agricultural education teacher educators should also demonstrate abilities in leadership and research methodologies. They must also be committed to the profession and to the production of quality outcomes in teaching and research (Torres and Garton, 1991). Prospective faculty members should also hole a doctoral degree (Ph.D. or Ed.D.) in agricultural education with an emphasis/minor in Teacher Education.

Table 16. Criteria For the Selection of Faculty in the Preservice Teacher Education in Agriculture

Criteria	Means of Assessment	Roles Addressed
Minimum of three years of teaching experience in agriculture	Application, interview, portfolio, references	F U D A E R
Demonstrated excellence in teaching	Demonstration, work sample portfolio, video tape	F U E R
Effective oral and written communication skills	Portfolio, interview, publications	F D A E R
Leadership skills and abilities	Involvement in professional organizations, interview	F D A E R
Ability to conduct quality research	Portfolio, publications, research reports	U D E
Commitment to the agricultural education profession	References, portfolio	F U D A E R
Doctorate in agricultural education with emphasis/minor in teacher education	Transcripts	F U D A E R
Professional appearance	Interview, observation	E R

Key: F = Facilitator of Learning
U = Understander of Learner
D = Program Developer
A = Administrator
E = Professional Educator
R = Role Model and Mentor

SECTION SEVEN

EVALUATION

Evaluation is an essential component of the agriculture teacher education program (Torres & Garton, 1991). However, teacher educators have used subjective judgement in the past to make decisions regarding the effectiveness of the program they offer to prospective teachers.

Evaluation has many different definitions. Cronbach (1963) defined evaluation as the collection and use of information to make decisions about an educational program. The Joint Committee on Standards for Educational Evaluation (1981) defines evaluation as the systematic investigation of the worth or merit of some object. Stufflebeam (1982) defined evaluation for teacher education as the process of delineating, obtaining, and applying descriptive goals, design, implementation, and input to promote improvement, serve needs for accountability, and foster understanding.

Evaluation is a conceptual activity. An essential attribute of evaluation is the extent to which evaluators and their clients conceptualize the evaluation process from purpose, to questions, to data collection methods, to data analysis, to conclusions and recommendations, to utilization of results (Galluzzo & Craig, 1990).

NCATE (1994) does not have a section that specifically identifies standards for evaluating the teacher education program. However, there are many references within the document that addresses the need to have some type of evaluation of the teacher education program. For example, instruction should be continuously evaluated and the results used to improve teaching within the teacher education program. Also, the teacher

education program has the responsibility, authority, and personnel to develop, administer, evaluate, and revise all professional education programs.

NASDTEC (1989) also has no specific program evaluation standards, but mentions the responsibility for program evaluation. NASDTEC notes responsibilities for curriculum development, evaluation, and revision of the total teacher education programs and a progress of evaluation of individual programs and of the total program be in evidence. The Ohio Standards (1987) requires teacher education programs conduct evaluations at least every five years using a well-defined plan that includes follow-up of graduates.

Evaluation of teacher education programs is needed to provide a solid foundation for decision making, program planning, and program improvement (Torres & Garton, 1991). Mannebach & Drawbaugh (1981) indicated that evaluation is needed to improve staff performance and to ensure that programs are accountable. Furthermore, it is important to evaluate teacher education programs:

(1) to justify the expenditures invested in the program;

(2) to provide an objective and valid description of the program;

(3) to establish benchmarks for future comparison;

(4) to serve as a systematic review and to identify areas of strengths and weaknesses;

(5) to serve as a public relations mechanism;

(6) to involve people in the evaluation and provide them with information about the program; and

(7) to motivate faculty and staff members (Mannebach & Drawbaugh, 1981).

Galluzzo and Craig (1990) also identified purposes for teacher education program evaluation. It is important to conduct evaluation in teacher education for accountability, improvement, understanding, and knowledge production. Accountability refers to the degree to which an evaluation is conducted to meet external accreditation standards. Improvement means identifying strengths and weaknesses of the programs, using this information to make the program stronger and better. Understand refers to having the stakeholders clearly understand the experiences of preservice teachers. Knowledge means conducting evaluations that will contribute to the knowledge base of the profession.

There are many different models and approaches that have been recommended and used in the evaluation of teacher education programs. One of the earliest models was proposed by Sandefur (1970). This model came about in response to the American Association of Colleges for Teacher Education (AACTE) call for papers illustrating different kinds of follow-up models. Because Sandefur's model was the only one submitted, his model became AACTE's formal position on evaluation in teacher education. Sandefur's model consists of four parts:

(1) the collecting of career data on graduates;

(2) the collection of observational data through direct observation;

(3) the collection of pupil, peer, and supervisor ratings of every observed teacher; and

(4) the collection of standardized test data on students.

Another approach that has been used is that of objectives-based evaluation. Objectives-based evaluation has also been labeled as goal attainment evaluation. When

using this approach, evaluators determine whether the stated objectives of a program are achieved and the quality of the evaluation is dependent upon the clarity with which the objectives of the program were communicated. Objectives-based evaluation can be formative, summative, or goal-free in nature. Formative evaluation is used when the evaluator is working to improve a project, program, or set of materials still under development. Summative evaluation can be used when the evaluator is seeking to assess the merit of a completed program, project, or set of materials. With goal-free evaluation, the evaluator avoids any direct contact with the goals of the organization.

Another approach to evaluation is the decision-facilitation approach. The goal of the decision-facilitation model is toward serving educational decision-makers. Evaluators act as collectors of data that is organized and presented to decision makers so they can make their own judgement from the data. Judgement about the merit and worth of the program rests outside the responsibility of the evaluator.

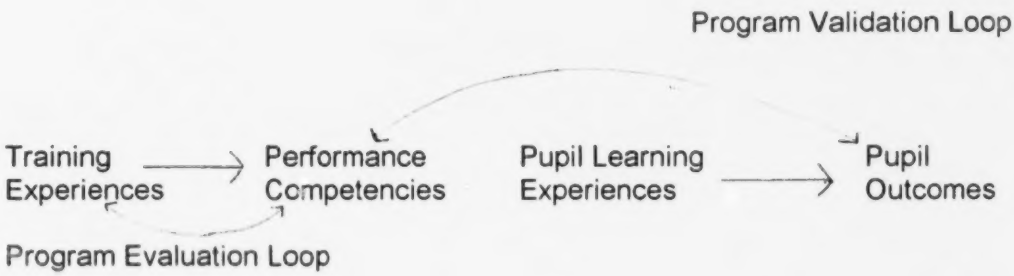
One of the most popular models used with the decision-facilitation approach is the CIPP model. CIPP stands for context, input, process, and product evaluation. A rationale is provided for the identification of educational objectives. Next, the evaluator seeks to determine if the organization has the resources to insure successful completion of the program. Next, process evaluation is used to locate any flaws in the procedures or processes un the implementation of the program. Finally, data is collected on the outcomes of the program, related to the contexts of the program, and then interpreted.

One of the more recent and commonly used approaches to evaluation in teacher education is the goal-attainment or outcomes-based model offered by Medley (1977).

With Medley's model, teacher education programs were to specify expected outcomes of the teacher education program and design a data collection system around the stated outcomes (Galluzzo & Craig, 1990).

Figure 4 shows Medley's (1977) model for evaluation. The program evaluation loop deals with the assessment of process, or formative, criteria while the program validation loop involves the product, or summative, criteria (Torres & Garton, 1991). This model is very appealing to use in that it considers the ultimate objective of teacher education programs, which is to produce desired student outcomes based on performance competencies as influences by the roles of the teacher.

Figure 4. Medley's Evaluation Model



Keeping in mind what few standards are suggested by NCATE (1994), NASDTEC (1989), the Ohio Standards (1987), and the purposes of evaluation identified by Mannebach & Drawbaugh (1981) and Galluzzo & Craig (1990), a plan for the evaluation of the teacher education program in agriculture are recommended in Table 17. This plan is adapted from Miller (1988) and Torres & Garton (1991). Both process (formative) and

Table 17 Evaluation of the Teacher Education Program in Agriculture

Type of Evaluation	Evaluators	Roles Addressed
Process (Formative): Considers students, preservice curriculum, and administrative concerns		
Internal	Departmental faculty	F U D A P R
	Departmental committee	F U D A P R
	Advisory committee	F U D A P R
External	Faculty and Teacher Educators from other universities	F U D A P R
	Accreditation councils	F U D A P R
Product (Summative): Consideration of teacher behavior and student outcomes		
Phase One: Student Outcomes	Department faculty	F U D A P R
Phase Two: First Year Teachers	School Administrators	F U D A P R
	Departmental Faculty	F U D A P R
Phase Three: Five Year Follow-up	School Administrators	F U D A P R
	State Department of Ed.	F U D A P R
	Departmental Faculty	F U D A P R

Key: F = Facilitator of Learning
U = Understander of Learner
D = Program Developer
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product evaluation (summative) evaluation procedures are considered.

In the process evaluation process, students, the preservice curriculum, and administrative concerns would be evaluated. Both internal and external means of evaluation would be used. The internal evaluation would be conducted by all departmental faculty, a committee appointed by the department chair, or an advisory committee to the department. External evaluations would be conducted by faculty/teacher educators from other colleges and universities and by accreditation councils and agencies like NCATE, NASDTEC, or the State Department of Education.

Product evaluation would look at teacher behavior and student outcomes. There are three phases to product evaluation. The first phase would be assessing student outcomes upon program completing. Students should be assessed on their knowledge, skills, and attitudes to fulfill the roles needed by agricultural education teachers. This evaluation would be conducted by faculty members in the department. The second phase would involving assessing the first-year teacher's performance upon completion of their first year of teaching. School administrators and teacher educators would be involved in the evaluation process. Teachers would be evaluated on how well they are fulfilling the roles of an agricultural education teacher and what knowledge, skills, and attitudes they still need to work on to become an effective teacher. The final phase involves conducting a five-year follow-up of teacher education graduates conducted by state department personnel, teacher educators, and school administrators. The role statements identified earlier in this proposal will be assessed as well as the knowledge, skills, and attitudes identified. It is also recommended that evaluations be conducted every five years henceforth to assess

the roles of agricultural education teachers and the knowledge, skills, and abilities needed by teachers. Conducting evaluation every five years will make sure that teacher education programs are preparing teachers for the proper roles of the future that the curriculum provides preservice students with the most up-to-date knowledge and skills to produce the most effective teachers.

SECTION EIGHT

DISTINGUISHING ELEMENTS

The proposed preservice program for the preparation of agricultural education teachers has many distinguishing elements that separate it from other preservice teacher education programs in agriculture. Some most notable distinguishing elements include:

(1) Role statements reflect the challenges and trends agricultural education teachers will face in the next century regarding the incorporation of science principles into the agriculture curriculum.

(2) Knowledge, skills, and abilities for agricultural education teachers reflect the need to have a stronger background in and appreciation for science concepts and principles as they relate to agriculture.

(3) Technical agriculture courses selected for the preservice curriculum emphasize biology, chemistry, and physical science principles.

(4) A foundations course in agricultural education has been developed to provide preservice agricultural education students with a sound theoretical and philosophical base for agricultural education.

(5) A course in leadership development and work experience in agriculture was developed to addresses the needs of preparing competent student leaders and provides for and supervise students in a variety of settings where they can acquire marketable job skills.

(6) A course in laboratory management in agricultural education was created to address the need to organize and facilitate student learning in a variety of settings other than the classroom and agricultural mechanics laboratory.

(7) Early field experiences require students to observe agricultural education programs in both rural and urban/suburban settings.

(8) More hands-on instructional activities have been recommended for preservice courses.

(9) A multicultural education course is included under the teaching and learning theory component as advocated by NCATE and NASDTEC.

(10) Upon completion of the preservice program, graduates will be fully qualified to teach agriscience courses.

(11) Working relationships are recommended between agriculture teacher educators and science teacher educators.

(12) Preservice students must complete and submit a portfolio for admission into the teacher education program, documenting competence in basic skills, science, leadership skills, oral communication skills, written communication skills, and evidence of demonstrating effective teaching practices.

(13) Students must also be selected for admission to the student teaching component of the preservice teacher education program.

(14) Ongoing evaluation of the teacher preparation program is carried out utilizing Medley's (1977) model.

(15) It is recommended that a teacher educator with a strong background in science education be recruited for the teacher education faculty in agriculture.

(16) A course was recommended for preservice students in working with exceptional children.

(17) Preservice students will complete additional course work in science (biology, chemistry, and physics) to provide students with a stronger background in science to teach agriscience courses.

SECTION NINE

ISSUES AND PROBLEMS ASSOCIATED WITH DEVELOPING A PRESERVICE TEACHER EDUCATION PROGRAM IN AGRICULTURE

Many issues and problems face those involved with the organization and administration of preservice teacher education programs in agriculture. There will never be a time when there will be no problems to encounter in a preservice teacher education program. Some issues and problems currently facing the administration of a teacher education program in agriculture are as follows:

Role Statements

(1) The context of agriculture is constantly changing, affecting the roles agricultural education teachers must perform in the future.

(2) The changing context of agriculture also affects the knowledge, skills, and attitudes needed by agricultural education teachers in the twenty-first century.

(3) The literature does not clearly define what the roles of effective teachers should be.

(4) There is difficulty in defining how an agricultural education teacher should be a good role model and mentor to students.

Curriculum

(1) Universities admit that they do not offer a true general education, offering requirements simply as basic education requirements (Cruickshank, 1985).

(2) There is not a true definition for a general education and a general educated person (Cruickshank, 1985).

(3) There is disagreement in the profession regarding what constitutes required knowledge and skills for teaching (Cruickshank, 1990).

(4) There is often duplication of course content in the preservice teacher education curriculum (Cruickshank, 1985).

(5) There is disagreement to what technical agriculture courses are suitable to provide preservice students with science principles.

(6) How much time should preservice students spend in early field experiences?

(7) How much time should students spend at the student teaching site?

(8) Should the preservice teacher education program be four years or five years in length?

Instruction

(1) Teacher educators report limited use of instructional alternatives (Cruickshank, 1990).

(2) Teacher educators disagree what the content of professional education courses should be.

(3) Teaching is highly idiosyncratic (Cruickshank, 1990).

(4) Teacher educators are unfamiliar with instructional alternatives (Cruickshank, 1990).

(5) Teachers tend to teach how they were taught (McCormick, 1985).

(6) Financial constraints limit equipment and space needed to use certain instructional alternatives.

Resources and Facilities

(1) Agriculture teacher education programs rely on other department with inferior instructional facilities to assist in the preparation of teachers.

(2) There needs to be continual planning to have facilities that are up-to-date to provide the best learning environment possible.

(3) There continues to be some debate to whether agricultural education departments should be housed in Colleges of Education or Colleges or Agriculture (Peters & Moore, 1984).

(4) These is no consensus what qualities cooperating teachers should have to be consider for student teaching sites.

Student Selection

(1) Agricultural education departments should not require higher standards that the college or university (Annis & Paul, 1981).

(2) Education students continue to rank lower on admission standard that other students.

(3) There is disagreement in the profession as to what criteria should be used when recruiting and selecting students into teacher education programs.

(4) Admissions standards are criticized for both lax and inappropriate with institutions accepting 90 percent of their applicants (Laman & Reeves, 1983).

(5) Having a culturally diverse student population.

Faculty Selection

(1) There is a problem ensuring that faculty are models of excellent teaching (NASDTEC, 1989; NCATE, 1994)

(2) There is no common set of purposes, body of knowledge, value systems,or concerns among teacher education faculties (Haberman & Stinnett, 1973).

(3) Having a culturally diverse faculty.

(4) Should a science education faculty members be on the agriculture teacher education faculty?

Evaluation

(1) There is a validity problem with internal evaluation of teacher education programs.

(2) There is no agreement on what measures should be assessed in teacher education program evaluations (Mannebach & Drawbaugh, 1981).

(3) The results of evaluation procedures have not been utilized to their fullest potential in improving teacher education programs.

(4) There is a lack of consensus on the purpose of evaluation and how it should be conducted (Mannebach & Drawbaugh, 1981).

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